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# Educational Management in the Digital Era: Efforts to Optimize Human Resource Infrastructure and Technology-Based Learning

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***Abstract***

*Educational institutions strive to maximize the use of technology, starting from limited facilities, uneven teacher readiness, to the varying abilities of students in adapting to digital changes. If a technology-based education management strategy is not carefully designed, it has the potential to hinder the achievement of ideal education quality and widen the education access gap between regions. Findings show that well-running education management requires a comprehensive approach, including the development of technological facilities, strengthening teacher capacity through training, and designing learning strategies that can adjust to student needs. Institutions that can implement digital-based management strategies tend to achieve better learning outcomes, closer relationships between teachers and students, and more efficient administrative governance. Thus, improving education management through. The use of digital technology has become a crucial step to maintain both the quality and continuity of education today.*

**Keywords: Education Management, Digitalization of Education, Quality of Education.**

## INTRODUCTION

For a nation, education becomes the main capital for producing competent and quality human resources. The presence of superior human resources also helps improve the living standards of society as well as the progress of the nation, making education occupy a strategic position in various aspects of life, including the economic, political, social, and



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cultural fields (Fawzi and Dodi 2022). To achieve quality education, effective and well-organized education management is needed. Basically, management is a process of aligning individuals or groups to achieve common goals. Unfortunately, the mistaken view that considers management merely as an administrative matter can reduce its effectiveness (Fardiansyah et al. 2022a)

Amidst globalization and rapid technological advancements, educational institutions face significant challenges in developing superior human resources. Therefore, educational management systems are required to continuously adapt to change and maximize the utilization of existing resources so that the educational process can proceed effectively and efficiently. The main challenges faced in educational management lie in efforts to boost the quality of the learning process while simultaneously managing various educational resources, from teachers, curriculum, facilities, to learning technology. The lack of strategic planning often leads to unequal distribution of resources, low educational quality, and suboptimal learning outcomes (Siregar and Siregar 2024)Meanwhile, advances in digital technology have also triggered various breakthroughs in educational governance, including academic administration, assessment systems, and teaching methods (Masinambow, Lengkong, and Rotty 2025)The use of technology in education is expected to boost administrative efficiency, facilitate communication between stakeholders, and expand the reach of learning resources (Astuti et al. 2024). Therefore, educational institutions are required to formulate innovative strategies in responding to digital transformation, including integrating information systems. academics by implementing technology-based learning methods such as e-learning, artificial intelligence (AI), and big data. The application of digitalization in education management is not only useful for optimizing resources but also supports a more accurate decision-making process to boost the overall quality of education. Several previous studies have reviewed the intricacies of education management. (Efendi and Sholeh 2023a) focused on the importance of human resource skills in managing educational institutions, with conceptual, technical, and interpersonal skills as determining factors for successful management(Sherly et al. 2021) demonstrated that the structured arrangement of teaching materials can boost curriculum effectiveness and student enthusiasm for learning.(Zohriah et al. 2025a)emphasized that successful curriculum management depends on consideration of student growth and development, teacher capacity, and community involvement.

(Firdaus et al. 2022)found that the unequal distribution of teachers is the main cause of the gap in education quality between cities and villages, a condition exacerbated by the lack of incentives for teachers in remote areas(Kusuma et al. 2024)also highlighted the issue


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of unequal distribution of educational facilities, which also limits access to education in several regions. (Harini et al. 2023) highlighted the importance of digitalization in education management to boost the efficiency and affordability of the education system, despite still being hampered by the readiness of human resources and supporting facilities. These findings indicate that effective education management requires a comprehensive strategy that encompasses aspects of human resources, facilities, curriculum, and digitalization to boost both quality and equity in education.

This study aims to examine efforts to optimize education management to boost the quality of education in the digital era. The urgency of this study stems from the critical importance of improving education management to boost the quality of education in today's digital era. The rapid development of technology requires education systems to continuously adapt to make the learning process more effective, efficient, and in line with the demands of the times. However, many educational institutions still grapple with various obstacles in maximizing the implementation of technology, both regarding facilities, teacher readiness, and student response to change. The absence of a technology-based education management strategy has the potential to hinder the achievement of optimal education quality. Therefore, this study is relevant to explore ways in which education management can be improved to address the disparity between urban and rural areas.

**Objectives**

This article aims to:

1. Understand technological developments
2. Optimize human resources
3. Improve the quality and usefulness of human resources



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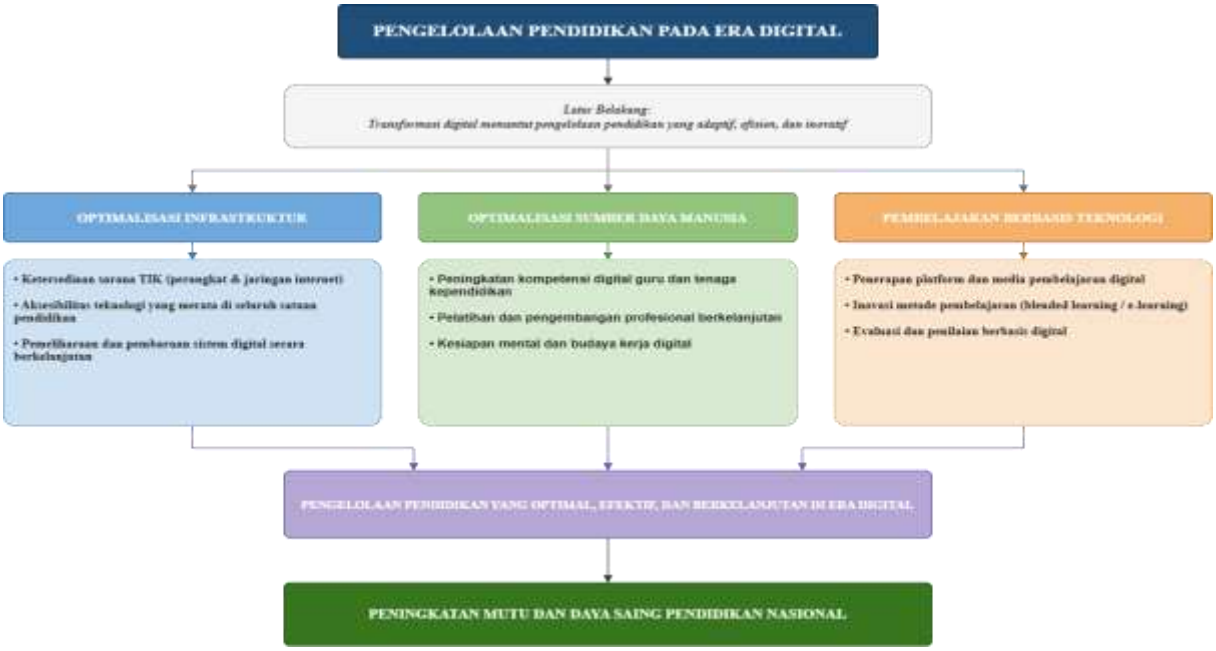



**Figure 1.** Education Management in the Digital Era




**Figure 2.** The Relationship between Human Resources Infrastructure and Technology Learning in Digital Era Education Management



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## DISCUSSION

Educational management is essentially a series of collaborative processes within an educational organization. The primary goal is to ensure that all activities within the educational institution are carried out effectively and efficiently to achieve predetermined targets (Fardiansyah et al. 2022 This field involves several interrelated components to effectively and efficiently realize educational goals. Among the key components are human resources (HR), funding, teaching materials, community-based methods, and time management. Furthermore, infrastructure issues remain a fundamental issue in the digital divide between regions. Educational units in large cities have relatively adequate internet access, ICT devices, and digital platforms, while underdeveloped, frontier, and outermost (3T) regions still face limitations in network connectivity, electricity, and equipment procurement budgets. This disparity contributes to the uneven digitalization process in education. The digital competency of educators and staff remains variable. Some educators, especially those unfamiliar with technology, demonstrate resistance to changes in learning methods.

The training provided is often ceremonial and unsustainable, thus not having a significant impact on improving digital literacy as a whole. The problem with technology-based learning is that the use of learning management systems (LMS) and digital media often only involves transferring conventional formats to digital, without accompanying pedagogical redesign. The availability of contextual and quality digital content is still limited, and not all educational units have adequate student data security policies. The three root causes of the discussion are interrelated: adequate infrastructure without competent human resources will not be optimally utilized; conversely, competent human resources without infrastructure support will hamper their implementation.

The meeting point of these three, as depicted in the Venn diagram, is weak governance that integrates these three aspects simultaneously.

Among all these components, human resources (HR) occupy a crucial position in the management of educational institutions. HR management involves structuring the organization based on each individual's expertise, encompassing technical, conceptual, and interpersonal skills.

Conceptual skills are useful for understanding the complexities of the organization as a whole, while technical skills focus more on applying knowledge and tools to specific tasks. Meanwhile, interpersonal skills are needed to build collaboration and understand the motivations that drive others (Efendi and Sholeh 2023). Furthermore, funding is also a crucial element in ensuring efficient resource utilization, including budgeting and the


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allocation of funds for various educational activities. Teaching materials play a significant role in developing an effective curriculum. Appropriately organized teaching materials enable educational institutions to design curricula aligned with student needs and educational goals, while still considering the developmental stages and characteristics of each student (Sudirman et al. 2021)). Appropriately selected and engaging teaching materials can boost students' enthusiasm for learning. In addition, teaching methods, such as the use of technology and active learning, greatly help encourage student engagement throughout the learning process.

The community also plays a significant role in the success of educational institutions, as the target groups for educational services need to be actively involved in various educational activities. Community participation is crucial for building mutually beneficial relationships between educational institutions and their surrounding communities, while also attracting parents to send their children to school. Meanwhile, time, as a component, also needs to be carefully managed, given the limited learning time available to students. Efficient time management and appropriate scheduling can boost student learning outcomes ((Saeedi et al. 2023)Furthermore, student management focuses on handling students as the primary actors in the learning process. Based on the National Education System Law Number 20 of 2003, students are defined as members of the community who strive to develop their potential through available learning pathways. Therefore, good student management is crucial for achieving educational goals. Furthermore, competent curriculum management is also key to educational success, where its preparation must consider student development, teaching staff capacity, and community involvement (Zohriah et al. 2025). The management of facilities and infrastructure, personnel, and financing are also equally important in the world of education. Well-managed facilities and infrastructure will create a comfortable learning atmosphere. Meanwhile, effective personnel management includes planning steps, organizational structuring, and developing the competencies of teaching staff to boost the quality of education. The management of educational financing must be carried out transparently and responsibly to strengthen public trust in educational institutions. Good management of community relations will also strengthen cooperation to support the world of education, both through funding and programs that benefit students and the surrounding community (Zohriah et al. 2025)Based on what has been done, it was revealed that one of the main problems in educational governance is the unequal distribution of teaching staff between urban and rural areas. Schools in remote areas often face a shortage of teachers, especially for subjects requiring specific expertise, such as science, mathematics, and foreign languages. Conversely, schools in large cities are overstaffed with



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teachers with similar expertise, creating an imbalance in the distribution of educational quality. Consequently, students in remote areas do not receive equal access to education compared to their urban counterparts, which in turn widens the gap in academic achievement and learning outcomes. This imbalance is triggered by factors such as a lack of thorough planning in managing human resources in the education sector. The gap in teaching quality remains a significant issue in educational human resource management, given that teacher competence is a key determinant of improving educational quality (Febrianti and Mujahidah 2024).

The government and educational institutions have not yet successfully implemented an optimal teaching staff distribution system tailored to the needs of each region. As a result, schools in remote areas face a shortage of teachers, while leading schools in large cities experience a teacher glut. Furthermore, the lack of incentives and Limited facilities in remote areas are the main reason many teachers are reluctant to teach there. Lack of allowances, difficult transportation access, and limited supporting facilities make remote areas less attractive to teachers (Febrianti and Mujahidah 2024)

## CONCLUSION

Educational management is a crucial element in ensuring the effectiveness and efficiency of the learning process in educational institutions. Success is influenced by various components, from human resources and funding to teaching methods and facilities. The conceptual framework shows that educational management in the digital era can be broken down into three main variables: infrastructure, human resources, and technology-based learning, which then culminate in a synergy of managerial functions (POAC) to produce effective management.

The Venn diagram reinforces this idea conceptually by emphasizing that these three variables are not additive, but rather intersect. The area of intersection illustrates the ideal state of optimal educational management—however, this is theoretical, as in practice, resource limitations tend to make the actual intersection smaller than the conceptual one. One of the main problems still faced is the unequal distribution of teaching staff between urban and rural areas, which leads to a gap in the quality of education. Thus, it can be concluded that the effectiveness of education management in the digital era conceptually depends on the synergy of infrastructure, human resources, and technology-based learning.


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