



Educational Management Strategies to Improve School Quality in the Digital Era to Create Quality Schools

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Abstract: *This study aims to analyze educational management strategies for improving school quality in the digital era and their contribution to realizing quality schools. The study used a qualitative approach with descriptive methods. The research subjects included principals, teachers, and education personnel selected through purposive sampling. Data collection techniques were conducted through observation, interviews, and documentation. Data analysis used an interactive model that includes data reduction, data presentation, and conclusion drawing. The results show that the implementation of digital-based education management can improve administrative efficiency, learning quality, and the effectiveness of data-based decision-making. However, its implementation still faces various obstacles, such as limited teacher digital competence, lack of technological facilities and infrastructure, and resistance to change. Effective strategies for improving school quality through digital education management include strengthening principal leadership, improving the digital competence of educators, developing management information systems, providing technological infrastructure, and implementing continuous digital-based evaluation. In conclusion, digital education management makes a significant contribution to realizing quality schools when supported by competent human resources, adequate infrastructure, and a planned and sustainable strategy.*

Keywords: *Digital Education Management, School Quality, Education Strategy, Quality Schools, Digital Transformation*

Introduction

Education is a key pillar in developing quality human resources. In the context of globalization and increasingly rapid technological development, the world of education is required to adapt to various changes, particularly in the use of digital technology. The digital era has brought significant transformations in various aspects of life, including the education management system in schools. Therefore, effective and innovative education management is key to improving school quality and realizing quality educational institutions. However, the reality on the ground shows that many schools have not been able to optimize the implementation of digital-based education management to its full potential. Limited human resources, a lack of digital competence among educators, and a lack of technological facilities and infrastructure are major obstacles to this transformation process. Furthermore, conventional management systems tend to be less responsive to changes and student needs in the digital era, resulting in low learning quality and suboptimal educational outcomes.

On the other hand, demands for quality education are increasing, both from society and the government. Schools are not only required to produce academically intelligent graduates but also possess 21st-century skills such as critical thinking, creativity, collaboration, and communication. To address these challenges, an educational management strategy is needed that can integrate digital technology into every aspect of school management, from planning and implementation to evaluation of educational programs. Educational management strategies in the digital era focus not only on the use of technology but also include

strengthening school leadership, improving teacher competency, and developing an organizational culture that is adaptive to change. As educational leaders, school principals have a strategic role in designing and implementing policies that support digital transformation, thereby creating an effective, innovative, and quality-improving learning environment.

Table 1.1 Data on Technology Use in Education

No	Indicator	Percentage	Source
1	The school has internet access	>80%	Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia
2	Optimal use of the internet	±60%	Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia
3	Teachers with intermediate level digital competencies	55–65%	Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia

The data in the table above shows that the use of technology in education in Indonesia actually has a fairly strong infrastructure foundation. According to a report from the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia, more than 80% of schools have internet access. However, only around 60% are able to optimally utilize this technology to support the learning process and school management. This indicates a gap between the availability of technological facilities and the ability to use them in the field.

Table 1.2 Teacher Competency Data in Technology Integration

No	Indicator	Percentage	Source
1	Teachers experience difficulties in technology integration	±50%	UNESCO
2	Increasing student engagement with digital learning	±30%	National Assessment

This gap is further exacerbated by data showing that only around 55–65% of teachers possess digital competency at the intermediate level. This means that most educators are still adapting to technology, thus failing to fully integrate it into the learning process or education management. Furthermore, UNESCO data shows that around 50% of teachers in developing countries still experience difficulties integrating technology into their learning. This situation demonstrates that the challenges of digital transformation in education are not unique to Indonesia but are a global issue.

Nevertheless, the use of technology in learning has been shown to have a positive impact on student engagement. National assessment results indicate that teachers who actively use digital platforms are able to increase student engagement by approximately 30% compared to conventional methods. This confirms that appropriate technology utilization can be an effective strategy for improving the quality of learning. It

can be concluded that teacher competence is a key factor in the successful implementation of digital-based education management. Without the support of adequate human resource capabilities, the availability of technology will not have a significant impact on improving the quality of education. Therefore, an education management strategy is needed that focuses not only on providing infrastructure but also on continuously improving teachers' digital competence.

Based on the results of a review of several previous studies, it can be seen that numerous studies on educational management in the digital era have been conducted, but there are still several research gaps that require further study. Research conducted by Fitri Nur Mahmudah (2021) focused on developing a conceptual framework for educational management to improve the quality of education in the 4.0 era. However, this research is still theoretical and does not provide a practical overview of the implementation of educational management strategies at the educational unit level. Furthermore, research by Inom Nasution (2024) examined the role of educational management in the digital era by highlighting the various challenges and opportunities faced. The results showed that digitalization has a significant impact on educational effectiveness, but did not detail management strategies that can be implemented to concretely improve school quality.

Another study by Habibur Rahman (2024) focused more on optimizing Management Information Systems (MIS) to improve the quality of learning services. While making important contributions in terms of technology, this research was still limited to the use of information systems and did not comprehensively cover all aspects of education management. Furthermore, research by Ahmad Ridani (2025) showed that digital transformation in education management can improve quality, but still faces obstacles such as low digital literacy and infrastructure inequality. This study did not specifically examine strategies for implementing school-based education management that are adaptive to these conditions. Meanwhile, a study by Johni Eka Putra (2024) emphasized the importance of technology integration in education to improve learning quality. However, this research was more of a literature review and did not directly link it to education management strategies at the school level.

Based on the above description, it can be concluded that there is still a research gap in the form of the absence of a comprehensive study discussing educational management strategies integrated with digital technology to improve school quality in a concrete and applicable manner. Therefore, this study is present to fill this gap by focusing on the development of educational management strategies in the digital era to realize quality schools. It is understood that appropriate educational management strategies are essential to improve school quality in the digital era. Without good and directed management, the use of technology will not have a significant impact on the quality of education. Therefore, research on educational management strategies in improving school quality in the digital era is important to be carried out in order to make a real contribution to realizing quality schools.

Formulation of the problem

1. How is the implementation of educational management in the digital era to improve school quality?
2. What are the obstacles in implementing digital-based education management?
3. What are effective strategies for improving school quality through digital education management?
4. How does digital education management contribute to realizing quality schools?

Relevant Concepts and Theories

2.1 Educational Management

Educational management is the process of planning, organizing, implementing, and supervising all educational resources to achieve educational goals effectively and efficiently. In the modern context, educational management is not only oriented towards administration, but also towards quality improvement and continuous innovation. According to research by Mahmudah (2021), educational management in the 4.0 era emphasizes the development of superior human resources and the strengthening of technology- and innovation-based education systems. This indicates that educational management must be able to adapt to increasingly complex changes. Similarly, Nasution et al. (2024) stated that educational management in the digital era plays a strategic role in facing the challenges of globalization, particularly in increasing the effectiveness and efficiency of educational management. Thus, educational management is no longer conventional, but must be based on technology and data.

2.2 Educational Management in the Digital Era

The digital era has brought significant changes to the education system, particularly in terms of management and learning processes. Technology has become an integral part of education management, from planning to evaluation. According to Arum (2023), education management strategies in the digital era include the use of technology in learning, human resource management, technology-based curriculum development, and the implementation of innovative learning models. This shows that digitalization impacts not only the learning process but also the education management system as a whole. Furthermore, research by Sari et al. (2024) states that the implementation of technology in education management faces various challenges such as limited infrastructure, low digital literacy, and resistance to change. Therefore, appropriate strategies are needed for effective digital transformation.

2.3 School Quality

School quality is the level of success of an educational institution in achieving its stated educational goals, both academically and non-academically. Educational quality is influenced by various factors, such as school management, teacher competence, infrastructure, and the learning environment. According to Ridani and Sudadi (2025), educational quality in the digital era can be improved through the implementation of quality-based management integrated with technology, such as the use of a Learning Management System (LMS) and digital information systems. This demonstrates the crucial role of technology in improving educational quality. Furthermore, Nurhayati et al. (2024) emphasize that effective curriculum management that adapts to technological developments can create more effective and relevant learning that meets students' needs. Therefore, school quality is inseparable from management's ability to optimally integrate technology.

2.4 Educational Management Strategy

Educational management strategies are systematic steps designed to effectively achieve educational goals. These strategies encompass the planning, implementation, and evaluation of educational programs. According to Muhammad (2023), educational management strategies in the digital era encompass the management of learning technology, teacher competency development, and adaptive adjustments to educational policies to address change. This demonstrates that management strategies must be flexible and innovative. Furthermore, research by Rawis et al. (2025) states that integrating the concept of Total Quality Management (TQM) with digital technology can improve the effectiveness of educational services and the

quality of school management. Therefore, educational management strategies must lead to continuous quality improvement.

2.5 Quality Schools in the Digital Era

A quality school is one capable of producing competent, character-driven graduates who are able to compete in the global era. In the digital era, quality schools are characterized by their ability to integrate technology into the learning and management processes. According to Arjo (2026), educational quality is strongly influenced by an adaptive organizational culture, transformational leadership, and strong collaboration among school members. This demonstrates that the human factor remains key to educational success, despite rapid technological advancements. Furthermore, Ahmad et al. (2023) state that student management strategies in the digital era must be able to adapt to changing educational paradigms, thereby creating more effective and student-centered learning. Thus, quality schools depend not only on technology but also on proper management.

2.6 Framework of Thinking

Based on the theoretical explanation above, it can be concluded that educational management strategies in the digital era play a crucial role in improving school quality. Technology integration, teacher competency development, and effective leadership are key factors in achieving quality schools.

Implementation Method

3.1 Types and Approaches of Research

This study uses a qualitative approach with a descriptive approach. The qualitative approach was chosen because this study aims to understand phenomena in depth related to educational management strategies in improving school quality in the digital era. According to Hasan et al. (2022), qualitative research is a research method that focuses on understanding the meaning, perceptions, and experiences of subjects through direct interaction and open communication. This indicates that a qualitative approach is very appropriate for using in-depth to explore educational management strategies and practices. In line with this, Fadli (2021) stated that qualitative research aims to uncover phenomena holistically and contextually through data collection in natural settings, with the researcher as the main instrument. Therefore, this study does not use statistical calculations, but rather emphasizes descriptive analysis.

3.2 Location and Time of Research

This research was conducted at [name of school/institution], which was selected based on the consideration that the school had implemented elements of digital-based education management. The research was conducted in [insert month and year of research].

3.3 Research Subjects and Informants

The subjects in this study are the parties involved in educational management, namely:

1. Headmaster
2. Teacher
3. Educational staff
4. Students (as supporting informants)

Informants were selected using purposive sampling, choosing informants based on specific considerations relevant to the research objectives. According to Muhtadi and Dewi (2024), qualitative

research focuses on the subjects' experiences, behaviors, and perceptions, so informant selection must be selective based on the research needs.

3.4 Data Collection Techniques

Data collection techniques in this study include:

1. Observation
Observations were conducted to directly observe the educational management process and the use of technology in schools.
2. Interview
In-depth interviews were conducted with informants to obtain information related to educational management strategies in the digital era.
3. Documentation
Documentation is used to collect data in the form of school documents, archives, and other supporting data.

According to Adlini et al. (2022), data collection in qualitative research can be done through observation, interviews, and documentation to obtain comprehensive and in-depth data.

3.5 Data Analysis Techniques

The data analysis technique in this study uses an interactive analysis model, namely:

1. Data Reduction
Sorting and simplifying data obtained from the field
2. Data Presentation
Organize data in narrative, table, or descriptive form
3. Conclusion Drawing
Conclude research results based on analyzed data

According to Hasibuan et al. (2022), qualitative research is descriptive and uses an inductive analysis approach, namely drawing conclusions from specific to general data.

Results and Discussion

Implementation of educational management in the digital era to improve school quality

The implementation of educational management in the digital era is a strategic effort to improve school quality through the integrated use of information and communication technology in all aspects of educational management. Research has found that the implementation of digital-based educational management has had a positive impact on the effectiveness of school management, although various challenges remain. In terms of planning, schools have begun utilizing digital technology to develop data-driven work programs and plans. The use of school management applications, academic information systems, and other digital platforms helps schools manage student, teacher, and administrative data more systematically and efficiently. This aligns with Mahmudah's (2021) opinion, which states that educational management in the digital era must be based on data and technology to improve the quality of decision-making.

At the implementation stage, the implementation of educational management in the digital era is evident in the use of technology-based learning media such as Learning Management Systems (LMS), online learning applications, and the use of digital devices in teaching and learning activities. Teachers no

longer act merely as transmitters of material, but also as facilitators capable of integrating technology into learning. This is supported by Nasution et al. (2024), who emphasized that digitalization in education can increase learning effectiveness and student engagement. Furthermore, in terms of supervision and evaluation, digital technology makes it easier for schools to monitor teacher performance, student attendance, and learning outcomes. A digital-based evaluation system allows for fast and accurate data processing, so it can be used as a basis for decision-making to improve the quality of education. Thus, educational management functions, including planning, implementation, and evaluation, can run more optimally with the support of technology.

However, the implementation of educational management in the digital era is not without its challenges. Research shows that teachers' digital competencies are still limited, training is lacking, and technological facilities and infrastructure are not evenly distributed across schools. This condition aligns with the findings of Sari et al. (2024), who stated that the main challenges in educational digitalization are low digital literacy and limited infrastructure. Furthermore, the leadership of the principal is also a crucial factor in the successful implementation of digital educational management. Principals who possess vision and the ability to manage change tend to be able to drive digital transformation more effectively. This demonstrates that the success of educational management is determined not only by technology, but also by the quality of leadership and human resources.

In terms of school quality, the implementation of digital-based education management has been proven to improve learning quality, administrative efficiency, and transparency in school management. Students become more active and engaged in the learning process, while teachers gain access to a wider range of learning resources. This supports the overall improvement of education quality and aligns with the concept of quality schools in the digital era. Therefore, it can be concluded that the implementation of education management in the digital era plays a crucial role in improving school quality. However, the success of this implementation depends heavily on the readiness of human resources, the availability of infrastructure, and appropriate and sustainable management strategies. Therefore, integrated efforts are needed between the use of technology, improving teacher competency, and strengthening educational leadership to realize quality schools in the digital era.

What are the obstacles in implementing digital-based education management?

The implementation of digital-based education management is a strategic step in improving the effectiveness and quality of school management. However, various obstacles remain in its implementation, hindering the optimal use of technology in education management. One major obstacle lies in the limited digital competence of educators and education staff. Research shows that not all teachers have adequate skills in operating technological devices or integrating them into the learning and school administration processes. Some teachers are still in the adaptation stage, so their use of technology tends to be basic and suboptimal. This situation has resulted in the less than optimal implementation of digital-based management systems.

Furthermore, limited technological facilities and infrastructure are also a significant obstacle. Not all schools have adequate facilities, such as a stable internet connection, sufficient computer equipment, and an integrated information system. This infrastructure imbalance leads to uneven implementation of digital education management, particularly between schools in urban and rural areas. Consequently, the quality of

education management is unequal. Another obstacle is the lack of training and mentoring in technology use. Although some schools have digital facilities, without ongoing training, their utilization cannot be optimal. Teachers and education personnel need continuous capacity building to keep up with dynamic technological developments.

Furthermore, there is resistance to change among some educators. The shift from conventional to digital systems often creates discomfort, especially for individuals accustomed to legacy methods. This attitude can hinder the digital transformation process in education management, preventing the planned innovations from being fully implemented. Another equally important factor is the principal's leadership. Principals who lack a digital vision and adaptive managerial skills tend to struggle to direct and manage change. Strong leadership is essential for the effective implementation of digital-based education management strategies.

Furthermore, budget constraints also hinder the development of digital systems in schools. Procuring technological devices, developing information systems, and training human resources require significant costs. Schools with limited funding will struggle to implement a comprehensive digital transformation. Finally, data security and privacy present new challenges in digital-based education management. The use of digital systems increases the risk of data leaks, information misuse, and cyberattacks. Therefore, schools need adequate security systems to protect student, teacher, and administrative data. Based on this description, it can be concluded that obstacles to implementing digital-based education management include human resources, infrastructure, training, organizational culture, leadership, budget, and data security. Therefore, a comprehensive and sustainable strategy is needed to overcome these various obstacles so that the implementation of digital education management can run effectively and optimally improve school quality.

Effective strategies for improving school quality through digital education management

A digital education management strategy is a systematic approach that integrates technology into all school management functions to continuously improve the quality of education. Based on the analysis, several effective strategies can be implemented to achieve this goal. First, strengthening the principal's digital leadership is a key factor in the successful implementation of digital-based education management. Principals are required to have a clear vision for digital transformation and the ability to manage organizational change. Adaptive and innovative leadership can encourage the entire school community to actively participate in the use of technology, thereby making the management process more effective and focused.

Second, improving the digital competence of teachers and education personnel is a crucial strategy. As the primary implementers of learning, teachers must possess the ability to integrate technology into the teaching and learning process. Continuous training, workshops, and technical assistance are necessary so that teachers are not only able to use technology but also utilize it creatively and innovatively to improve the quality of learning. Third, the development and utilization of an education management information system (MIS) is a strategy that supports the efficiency and effectiveness of school management. This system enables the integrated and real-time management of academic, administrative, and evaluation data. With a good information system, decision-making can be made more quickly, accurately, and data-driven.

Fourth, the provision and equitable distribution of technological infrastructure is a crucial step in supporting the implementation of digital education management. The availability of a stable internet network, adequate technological devices, and easily accessible digital learning platforms are key prerequisites for optimal digital strategy implementation. Without adequate infrastructure support, technology implementation will encounter significant obstacles. Fifth, strengthening an organizational culture that is adaptive to change is also an equally important strategy. Schools need to build a work culture that is open to innovation, collaborative, and responsive to technological developments. This culture will encourage the entire school community to continuously learn and adapt, ensuring sustainable digital transformation.

Sixth, the continuous implementation of digital-based evaluation is a strategy to ensure the maintenance and improvement of educational quality. Evaluations conducted through digital systems enable rapid and accurate data collection and analysis. The results of these evaluations can be used as a basis for improving educational programs and policies in schools. Seventh, collaboration with various parties, such as the government, industry, and the community, is also a crucial strategy for improving school quality. This collaboration can support resource development, teacher capacity building, and the provision of better technological facilities. Based on this description, it can be concluded that an effective strategy for improving school quality through digital education management focuses not only on the use of technology but also encompasses aspects of leadership, human resources, infrastructure, organizational culture, and ongoing evaluation. Integrated and consistent implementation of this strategy will foster the creation of high-quality, adaptive, and competitive schools in the digital era.

The contribution of digital education management in realizing quality schools

Digital education management makes a significant contribution to achieving quality schools through the use of information and communication technology in all aspects of education management. Digital transformation not only transforms learning methods but also improves school management systems to be more effective, efficient, and transparent. One of the main contributions of digital education management is seen in the increased efficiency of school administration. With a digital-based management information system, the process of managing student, teacher, financial, and other administrative data can be carried out quickly and accurately. This reduces manual administrative workload and allows educators to focus more on improving the quality of learning. Furthermore, digital systems also facilitate access to information for all stakeholders, thereby creating transparency in school management.

Furthermore, digital education management contributes to improving the quality of the learning process. The use of digital platforms such as Learning Management Systems (LMS), interactive learning media, and online learning resources allows students to learn more flexibly and independently. Teachers also have the opportunity to develop more innovative and student-centered learning methods. This makes the learning process more engaging, effective, and tailored to the needs of students in the digital age. Furthermore, the implementation of digital education management supports data-driven decision-making. Data obtained from various digital systems can be analyzed to determine student progress, teacher performance, and the effectiveness of educational programs. This information serves as the basis for schools to formulate appropriate policies and strategies to improve educational quality. With a data-driven approach, decisions are more objective and focused.

Another contribution is strengthening the competency of human resources, particularly teachers and education personnel. Digital transformation encourages educators to continuously improve their technology skills, creating a professional and adaptable workforce. This competency improvement directly impacts the quality of learning and education management in schools. Furthermore, digital education management also plays a role in fostering a culture of innovation and collaboration within the school environment. Technology enables collaboration between teachers, students, and others without the constraints of space and time. Schools can collaborate with various parties, both locally and globally, to improve the quality of education. This innovative culture is one of the key characteristics of quality schools in the digital era.

However, this contribution will be optimal if supported by visionary leadership, infrastructure readiness, and the commitment of the entire school community. Without such support, the use of technology will not have a significant impact on improving the quality of education. Based on this description, it can be concluded that digital education management makes a very important contribution to realizing quality schools, particularly in aspects of management efficiency, improving the quality of learning, data-driven decision-making, strengthening human resource competencies, and developing a culture of innovation. Therefore, the implementation of digital education management needs to be carried out in a planned and sustainable manner to be able to produce superior education that is relevant to the demands of the times.

Conclusion

5.1 Conclusion

Based on the results of research and discussion regarding Educational Management Strategies in Improving School Quality in the Digital Era in Realizing Quality Schools, it can be concluded that:

First, the implementation of educational management in the digital era has brought significant changes to school management, particularly in the planning, implementation, and evaluation aspects, which are increasingly technology- and data-driven. The use of digital systems can improve administrative efficiency and the effectiveness of the learning process.

Second, various obstacles exist in implementing digital-based education management, including limited teacher digital competency, a lack of technological facilities and infrastructure, inadequate training, resistance to change, budget constraints, and data security challenges. These obstacles are inhibiting factors in optimizing digital transformation in schools.

Third, effective strategies for improving school quality through digital education management include strengthening principal leadership, improving teachers' digital competencies, developing management information systems, providing technological infrastructure, strengthening adaptive organizational culture, and implementing continuous digital-based evaluation.

Fourth, digital education management makes a significant contribution to realizing quality schools, particularly in improving management efficiency, learning quality, data-driven decision-making, and strengthening human resource competencies and a culture of innovation within the school environment. Therefore, it can be concluded that successful education management in the digital era depends heavily on the integration of technology, human resources, and appropriate management strategies.

5.2 Suggestions

Based on these conclusions, the suggestions that can be given are as follows:

1. For Schools

Schools are expected to optimize the use of digital technology in educational management and develop integrated information systems to support more effective and efficient management.

2. For the Principal

School principals need to have visionary leadership and be adaptive to technological developments, as well as being able to encourage innovation and change in the school environment.

3. For Teachers and Education Personnel

Teachers are expected to continue improving their digital competencies through training, workshops, and independent learning to enable them to integrate technology into their learning creatively and innovatively.

4. For the Government

The government is expected to provide support in the form of improving technological infrastructure, equalizing digital access, and providing ongoing training for educators.

5. For Further Researchers

Further research is expected to examine more innovative digital education management models in greater depth, as well as develop research with a quantitative or mixed methods approach to obtain more comprehensive results.

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