

The Role of Technology in Enhancing School Principals' Leadership Effectiveness: A Literature Reviews

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ABSTRACT

This study aims to explore the role of technology in improving the effectiveness of school principals' leadership by utilizing a literature reviews methodology. Relevant studies and sources were analyzed to examine how technology facilitates school management, data-driven decision-making, communication, and resource management. The findings reveal that digital-based management systems, analytics tools, and communication platforms help principals streamline administrative tasks, evaluate performance, and foster collaboration within the school community. Additionally, technology offers opportunities for professional development and strengthens engagement with stakeholders through social media and websites. However, challenges such as digital literacy gaps and data security concerns persist. Addressing these challenges is crucial for maximizing the potential of technology. The study concludes that the strategic and effective use of technology not only enhances school leadership but also contributes to creating better learning environments and improving educational quality. Continuous innovation and study are necessary to ensure technology remains a key driver in leadership effectiveness and satisfaction.

Keywords: School leadership, Educational technology, Principal effectiveness, Digital literacy, Data security.



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INTRODUCTION

The advancement of information and communication technology has led to transformative changes across various aspects of life, particularly in the field of education. Dewi et al. (2023) highlighted that technology is a factor with a profoundly significant influence on the education sector. Its impact extends beyond transforming teaching and learning methods to enhancing leadership effectiveness within school environments. As educational leaders, school principals play a pivotal role in managing resources, facilitating the teaching and learning process, and fostering a learning-friendly environment. Indra (2023) asserted that in this rapidly evolving digital and information technology era, integrating technology has become indispensable across various domains, including education.

Technological progress has introduced a variety of tools and platforms that school principals can leverage to enhance their leadership effectiveness. These range from digital-based school management systems and more efficient communication platforms to the application of analytical data for precise decision-making. Technology enables school principals to streamline administrative tasks, monitor and evaluate teacher and student

performance more effectively, and foster greater participation and engagement across the school community. Nevertheless, integrating technology into school leadership is not without its challenges. School principals must possess sufficient digital literacy, the ability to adapt to technological advancements, and an awareness of data security and privacy concerns. Therefore, understanding how to optimally utilize technology in school leadership and identifying the factors that influence its successful implementation are crucial considerations.

This article aims to explore the role of technological advancements in enhancing school principals' leadership effectiveness through a literature reviews methodology. By analyzing various relevant studies and literature, it seeks to provide a comprehensive understanding of technology's impact on school leadership, the challenges encountered, and strategies to maximize its potential in educational settings.

METHODS

This study adopts a literature study, also referred to as a library study method. The literature study was conducted by examining relevant sources to gather the necessary data, as outlined by Arikunto (2013). According to Danandjaja in Noviani & Sa'adah (2023), a literature study involves utilizing scientifically designed references, which include compiling materials relevant to the study objectives, employing library-based data collection techniques, and integrating and presenting the gathered data. Literature study relies on information and data collected from various sources, such as documents, books, articles, magazines, news, and more. The articles referenced in this study primarily focus on education financing and education quality.

Zed (2014) identifies the main characteristics of library study, namely: 1) Researchers work directly with text or numerical data; 2) Library data is readily available; 3) Library data is fundamentally a secondary source; and 4) Library data is not constrained by space or time. The steps in conducting library study, as described by Sari & Asmendri (2020), are: 1) Selecting a general idea related to the study theme; 2) Seeking information relevant to the theme; 3) Narrowing down the core focus of the study; 4) Investigating and organizing reading materials; 5) Understanding the materials and taking study notes; 6) Reviewing and supplementing with additional reading materials; and 7) Reorganizing the reading materials and initiating the writing process.

The data analysis technique employed in this study is content analysis. The analysis process begins with evaluating study findings that are categorized as highly relevant, relevant, or moderately relevant. This evaluation considers the year of publication, starting from the most recent studies and progressively moving to older ones. Researchers review the abstracts of prior studies to determine whether their discussed problems align with the current study objectives. Subsequently, the key points and relevant sections of these studies are noted to address the study problem effectively.

RESULTS

3.1 Principal Leadership

Leadership, according to Sweeney and McFarlin (as cited in Wibowo, 2011), is a process of influencing people with the aim of motivating subordinates, creating a vision for the future, and developing strategies to achieve goals. Similarly, Syahril (2019) states that leadership is the process of influencing the activities of an organized group to determine and achieve shared objectives.

Leadership can be defined as a leader's ability to influence, inspire, and mobilize their subordinates to carry out activities aimed at achieving the organization's goals. In the field of education, leadership involves influencing educators, support staff, and school members to work collaboratively toward achieving educational objectives. According to Fatonah (2017), leadership in education specifically refers to an individual's ability to guide, mobilize, and direct members or subordinates in the implementation of educational and teaching processes to achieve predetermined goals.

From these definitions, it can be concluded that educational leadership refers to the school principal's ability to influence all school stakeholders teachers, staff, and students to collaboratively execute programs designed to achieve educational objectives. Priansa (as cited in Minsih et al., 2019) emphasizes that the school principal is a professional position within the organizational structure of a school, tasked with managing all school resources and collaborating with teachers and staff to educate students and achieve educational goals. Furthermore, Julaiha (2019) describes the principal as the driving force behind the human resources in a school, responsible for guiding teachers and staff toward the achievement of educational goals, with the school's success hinging on the quality of the principal's leadership. A school principal is expected to meet five competency standards, which include: personality competence, managerial competence, entrepreneurial competence, supervision competence, and social competence.

In terms of personality competence, a school principal must embody noble character and serve as a role model within the school. Principals are responsible for fostering traditions and instilling virtuous values within the school community. This requires a commitment to self-development, openness in fulfilling their roles, and the ability to manage and resolve problems effectively. All school principals are required to meet the standards outlined in the Minister of National Education Regulation No. 13/2007 regarding qualification and competency standards for school principals.

Julaiha (2019) identifies three fundamental managerial competencies that school principals must possess:

- Technical skills: These involve knowledge, methods, and techniques necessary for completing tasks effectively.
- Human skills: These refer to the ability to interact with and influence employees to foster collaboration.
- Conceptual skills: These pertain to the principal's understanding of the organization, enabling them to analyze and solve problems efficiently.

According to Ministry of Education and Culture Regulations No. 0489/U/1992 and No. 054/U/1993, the functions and responsibilities of school principals include: Organizing educational activities, Promoting academic excellence, Providing guidance and performance assessments for teachers and staff, Planning and overseeing school administration, Managing the development, use, and maintenance of facilities and infrastructure, and Building relationships with the surrounding environment, parents, and the community.

3.2 Technological Advances in the Education Sector

In the context of Indonesia's education sector, technological advancements have garnered significant recognition from education practitioners. The incorporation of technology has greatly enhanced the learning process, fostering more efficient communication between students and teachers while simplifying access to a wide array of information and learning materials. Students now have access to various informal learning resources that were previously unavailable, and teachers can leverage technology to broaden students' knowledge and skills more comprehensively. The rapid growth of information and communication technology has transformed human life in extraordinary ways, making processes easier without compromising humanity. According to Dewi et al (2023), information and communication technology has had a significant impact on the education sector, particularly in learning contexts. The integration of communication tools like telephones, computers, the internet, and email facilitates interactions between teachers and students beyond physical meetings. Teachers can offer their services remotely, while students can explore diverse information sources in virtual environments using digital platforms.

Incorporating technology in learning is a strategic approach to preparing the future workforce. As industries evolve, schools and educational offices must prioritize technological advancements that align with modern educational needs. Contemporary educational technologies focus on the application of teaching theories and practices, enabling students to acquire and maintain essential knowledge and skills. Lestari (2018) emphasizes that technology in education serves as a system that supports learning, ensuring that desired outcomes are achieved. Its implementation encompasses roles as a learning medium, administrative tool, and resource, making it indispensable in adapting to the digital era. Clark, as cited in Lestari (2018), likens technology to a delivery vehicle, stating it facilitates teaching but does not directly influence learning outcomes. Therefore, technology acts as a medium to achieve the educational goals set by institutions. Students who utilize technology effectively to enhance their knowledge and skills are more likely to excel, while those who fail to adapt may face negative outcomes. Ilham (2022), highlights that rapid technological advancements have influenced progress in educational media, a critical factor in teaching and learning success. Modern learning technologies encompass both theoretical and practical applications, serving as essential learning resources.

3.3 The Role of Technological Advances in Increasing the Effectiveness of School Principal Leadership

Drawing from the perspectives outlined above, it is evident that technological advancements play a pivotal role in educational progress and enhance school principal leadership. In leadership contexts, technology supports more effective teaching and learning activities. School principals can use technology to monitor student performance, manage administrative data, and communicate efficiently with teachers and students. This, in turn, enhances the overall quality of education. The potential of technology to improve school leadership effectiveness is immense. Advances in information and communication technology offer school principals tools to influence teachers and staff, fostering alignment with digital-era developments. Effective integration of technology in schools not only elevates leadership quality but also ensures the institution thrives under progressive

leadership. Study by Windiarti et al (2023), highlights the use of Generative AI in educational innovation as a method for enhancing principals' competencies, demonstrating one practical application of technological progress. Technology aids principals in making informed decisions, monitoring school activities, and improving communication. Furthermore, digital management systems like the School Management Information System (SIMS) provide real-time access to vital data such as student records, academic schedules, and attendance, enabling faster and more accurate decision-making. E-learning platforms and webinars present opportunities for continuous professional development, while security technologies like CCTV systems and emergency alarms contribute to safer school environments.

By leveraging these advancements, principals can effectively address contemporary challenges and steer their institutions toward achieving educational goals. A leader's adaptability to digital advancements is a reflection of their institution's growth. Therefore, technological progress is an indispensable tool for achieving educational excellence.

CONCLUSIONS

The advancement of information and communication technology has significantly influenced various aspects of life, including education. In the context of school leadership, technology serves as a vital tool that enables principals to enhance their effectiveness. By implementing digital-based school management systems, leveraging data analytics, utilizing efficient communication platforms, and employing monitoring and evaluation technologies, principals can lead and manage schools more effectively. Technology also offers opportunities for continuous training and professional development, allowing principals to refine their skills and expand their knowledge. Additionally, social media platforms and school websites strengthen engagement with the school community, while IoT technology supports more efficient management of school resources. With the help of technology-driven decision-making tools and advanced security systems, principals are better equipped to make informed decisions while ensuring the safety of the entire school community. This highlights the pivotal role of technology in fostering improved learning environments, enhancing academic performance, and strengthening relationships within the school ecosystem. When used appropriately and effectively, technology can significantly enhance school leadership, ultimately contributing to the overall improvement of education quality. Nonetheless, challenges such as limited digital literacy and concerns over data security must be addressed to fully realize the potential of technology. Continuous study and innovation are essential to ensure that technology remains a key enabler of more effective principal leadership and greater job satisfaction.

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