

Principal Leadership in Digitalization: A Perspective on the Role of Supervisors

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Abstract: This study aims to explore the strategies and methods used by school principals in implementing school digitalization, taking into account the perspective of the role of supervisors as key partners in the process. This study also seeks to investigate how the Effectiveness of Principals' Strategies and Methods in School Digitalization takes into account the Perspective of Transforming the Role of Supervisors. Qualitative designs are used, specifically types of phenomenology using in-depth interview lists, participatory observations, focus group observations (FGDs), physical artifacts, observation journals or field notes, and analysis of modified documentation to collect data. The respondents were 16 supervisors, 25 principals and junior high school teachers from 5 areas of Jember regency in East Java province, which was conducted from January to December 2024. The data was analyzed using identification, classification and interpretation of data with the help of the QDA Miner computerized program.

Keywords: Principal leadership, digitalization, The role of supervisors

1. INTRODUCTION

The supervisor conducts assistance activities for the Principal in implementing all work programs of the Education Unit through strategies, methods, and feedback in accordance with the needs of each Education Unit he leads (Ministry of Education and Culture, 2023). Global challenges and the Industrial Revolution 4.0 and 5.0 are walls that must be faced (Sinar, 2021). Digital information literacy encompasses the knowledge, skills, and abilities associated with defining, accessing, evaluating, managing, integrating, and creating information through the critical and effective use of digital tools and technologies to solve information-based problems (Tenison & Sparks, 2023).

Some of the behaviors used by transformational leaders to reinforce school culture include reinforcing staff norms of excellence for their own work and students (Harris, 2003). *Programs of instructional E-supervision (PIS)* and *Programs of technology leadership (PTL)* of school principals play an important role in maintaining the *School Digital Culture (SDC)*. This culture is essential to ensure the effectiveness of collaborative learning processes that meet the needs of students in the digital age (Skantz-Åberg et al., 2022).

Previous research has shown that supervised information technology is a step forward for those used in realizing the effectiveness of educational process programs in madrasahs/schools (Fatimah, 2022). Human resources, and related theories such as skills biased to technological change, argue that skills development is a central strategy for individuals to remain employable in the digital labor market (Souto-Otero et al., 2023). Governance reforms are beneficial for investing resources in high-quality professional development for teachers and leaders (AGIRDAG & MUIJS, 2023). The provision of recommendations and feedback greatly determines performance achievements even in the smallest scope, for example between educators and students. The importance of digital literacy competencies for academic and professional life (*Organization for Economic Co-*

operation and Development (OECD, 2013). Technology-mediated feedback is one strategy that can assist educators in supporting the development of *students' Self-Regulated Learning (SRL)* (Sauchelli et al., 2023). Especially in Indonesia, being a teacher has many responsibilities, where they are expected to master basic competencies in the pedagogic, personality, social, and professional fields (Meidelina et al., 2023). The principal's technology leadership practices play a crucial role in fostering digital collaboration and communication among teachers, colleagues, and related stakeholders, contributing significantly to the integration of technology in the learning process (Rasdiana et al., 2024). The importance of management and adaptation and actions like this is a strategy that is responsive to the current conditions that occur in the world of education (Chollisni, A., 2022).

Meanwhile, there is still a gap between technological advances and digital knowledge and skills from education actors such as teachers, education staff and even school principals. There are still many teachers and even school principals who experience technological stutters so that it is difficult to adapt in today's digital era. This phenomenon also occurs when they have to fulfill administrative and learning tasks which are currently almost all IT-based, they tend to ask for the help of other people who are considered capable in completing their obligations.

Therefore, the introduction of ICT is very necessary to align with the development of the existing times. Initial investment in school infrastructure for ICT needs to be linked in its implementation to teachers' ICT beliefs, attitudes, and expertise related to ICT (Lomos et al., 2023). The internet expands and influences the sociocultural context in which readers learn to read by providing collaborative opportunities to share and respond to information across continents, cultures, and languages. (p. 459) (Coiro, 2021).

The focus of the discussion in this study is on the application of strategies and methods carried out by school principals from the perspective of transforming the role of

supervisors through their new role as facilitators and motivators through the cycle of mentoring actions, namely Assistance Planning in Education Units, Assistance in Program Planning of Education Units, Assistance in Program Implementation by Education Units and Reporting on Assistance that has been implemented (Ministry of Education and Culture of the Republic of Indonesia, 2023). Thus, this study aims to explore the strategies and methods used by school principals in implementing school digitalization, taking into account the perspective of the role of supervisors as key partners in the process.

2. METHOD

This type of research is qualitative research, namely research that studies behavior in a naturalistic and holistic manner. Researchers try to understand the different dimensions and layers of reality, such as the types of people in a group, how they think, how they interact, what types of agreements or norms exist, and how these dimensions come together holistically to describe the group (Johnson, 2017).

Approach using *Phenomenology Approach* where the analysis derives from the central assumption that there is an essence of experience to share with others who also have the individual life experience of phenomenology with the analysis of self-expression found in the investigation (Catherine Marshall, 2014).

The design of this study uses several stages, including: Selection of Supervisors and School Principals Who Will Be Involved in the Research through Simple Random Sample according to Sugiyono (2001:57), which is a sampling technique from population members that is carried out randomly without paying attention to the strata in the population using the *Equal Probability Of Selection Method* method (EPSEM); Data collection through in-depth interviews and participatory observation of supervisors and related parties, namely the principal and school residents as well as observation in the school environment. Conducting *Focus Group Discussion* (FGD) observations, physical artifacts, field notes, and documentation analysis; Data Analysis to Identify Strategies and Methods of School Digitalization Assistance assisted by the QDA Miner computerization program; Discussion of Findings with Supervisors and Education Experts and Preparation of Reports and Final Recommendations (Johnson, 2017).

Steps of QDA Miner-assisted data analysis: data import/data source; coding data; data visualization; Presentation of results and drawing conclusions (Adams et al., 2017).

The data collection methods selected and used are satisfactory and aligned with the nature and objectives of the research. Survey questionnaires allow researchers to collect responses based on respondents' general observations of specific statements. This method allows the research to collect and analyze data that helps to describe, observe, and document the effectiveness of school digitalization strategies and methods by school principals with the assistance of supervisors as partners in improving education.

3. RESULTS AND DISCUSSION

3.1 Result

Through surveys and interviews with a number of the best driving and advancing principals who have successfully integrated technology in learning, it was found that visionary, collaborative, proactive and reflective leadership is the key to the success of school digitalization. Strategies and methods will be integrated in the principal's leadership that can help build a clear and consistent vision for the school. Leadership that emphasizes the school's primary purpose as teaching and learning and is highly visible to staff and students (Harris, 2003). Effective principals are able to create an organizational culture that supports innovation, rewards the use of technology, and builds strong partnerships with supervisors in an effort to achieve common goals. An interesting result was found in one study that leadership style as a continuum, with transactional leadership being practiced before transformational leadership to enable change in organizations (Meidelina et al., 2023).

School Digitalization Program

Data collection is through documentation analysis from supervisors about the schools targeted by the driving schools and the schools that have the best progress. From the results of the analysis, school data is obtained in the following table:

NO	SCHOOL STATUS	NUMBER OF TARGET SCHOOLS		SUM
		DRIVING SCHOOL	BEST PROGRESS	
1	Country	2	15	17
2	Private	3	31	34

In the scope of education, digitalization is the ability to change various perspectives and educational processes to various forms of digitalization (Isma et al., 2022). Based on the results of the study, it was found that the management of school digitalization in schools that implemented the Driving School Program was in the average achievement of "Good" with the distribution: school digitalization planning in the "Very Good" achievement category with an average score of 89.73%. The implementation of school digitalization in the "Good" achievement category with an average score of 86.50% and the supervision of school digitalization in the "Good" achievement category with an average score of 86.81% in utilizing and developing digital platforms (Abdullatif et al., 2023). While the practical implications of digitalization for schools

is that distributed leadership practices can be an effective strategy to promote organizational learning skills in schools (Berkovich & Hassan, 2023).

In its development, technology has transformed conventional education into modern education. There is a significant relationship between principal technology leadership and teacher ICT integration used in teaching (Algie, 2023). In line with the development of literacy theory and research, professional organizations have also recognized the increasingly varied and digital nature of reading (Coiro, 2021). Key technology leadership is focused on the capacity to leverage digital technologies to drive innovation, foster organizational flexibility, and achieve strategic goals (Rasdiana et al., 2024). School Supervisors can carry out adaptive mentoring planning by utilizing technology or other relevant tools (Ministry of Education and Culture, 2023). Conceptualization *Teachers' Professional Digital Competence* (TPDC) needs to be directed away from a strong focus on each teacher's basic technological competencies and hands-on skills to focus on collective responsibility and accountability for TPDC, including by school leaders (Skantz-Åberg et al., 2022).

Principal Leadership Effectiveness

Data analysis was obtained from the results of interviews assisted by the QDA Miner computer application, environmental observation and document analysis consisting of several aspects, including: Digitalization Assistance Strategies and Methods through Training and Development, Integration of Technology in the Curriculum, Long-Term Implementation Plan, Evaluation and Reporting of the Digitalization Assistance Program and the principal's leadership commitment.

Effective mentoring strategies and methods from supervisors can help increase the success of the implementation of digital technology in schools, as well as ensure that the benefits can be felt by all education stakeholders, especially teachers as the frontline in becoming agents of educational change in schools. Every organization has the main goal for a good quality of work life, which is to improve working conditions and improve organizational efficiency. Poor working conditions can lead to a number of negative outcomes at both the personal and organizational levels (Root, 2018). A successful school improvement program should simultaneously address the school and classroom level, commit to building the school as a learning organization, and focus on classroom practice and teacher professional development through PLCs aligned with effective school leadership development (Congress A, 2023).

Based on the results of the study, it was found that the high level of technology leadership demonstrated by school principals indicates that they have recognized and practiced the competencies they possess and displayed the dimensions, competencies, and proficiency needed as technology leaders to advance their role in leading schools and the teaching and

learning landscape (Algie, 2023). The technology leadership shown by the principal can yield positive results on the teacher's digital professional capabilities (Rasdiana et al., 2024). Therefore, the Principal will inspire the formation of a culture of active collaboration and innovation in schools that allows everyone to explore and integrate digital resources and tools. The study also concluded that teachers have used ICT integration in the delivery of their learning instructions. Teachers have extensively implemented the use of ICT pedagogically.

Based on the results of other studies, it shows that the leadership of the principal has a significant effect on school performance. It is stated that leadership commitment has a significant effect on school performance, while the interaction of leadership commitment and *Good School Governance* has a significant effect on school performance (Novitasari et al., 2022).

3.2 Discussion

Principals' strategies and methods in school digitalization need to be considered more deeply by considering the role of supervisors as important stakeholders. Successful principals in implementing technology in learning not only focus on technical aspects, but also on staff capacity building, facilitating collaboration between teachers, and integrating technology into the curriculum.

The principal as the main leader in the school has the responsibility to ensure that the school's vision and mission are aligned with the goals of the digitalization program. School principals must be able to articulate the importance of technology integration in learning and motivate all stakeholders in the school to support the change. Firmness and clarity in communication from a school principal will help create sustainability and continuity of digitalization programs in schools.

School principals as agents of change must be able to apply technology and show a willingness to learn and adapt to technological developments, school principals can inspire teachers, students, and other school staff to participate in the use of technology in the learning process and school management. School principals need to have inclusive and collaborative leadership skills. The involvement of all stakeholders, including teachers, students, parents, and local communities, is critical to the success of the digitalization program. Principals who are able to foster teamwork, facilitate collaboration, and empower all school members will accelerate the process of implementing technology in education.

The chosen mentoring method also plays a vital role in the success of school digitalization. Starting from regular training, monitoring and evaluating progress, to building a solid communication network with supervisors and other school managers. With a holistic and sustainable approach, school principals can face the challenges and opportunities that come along with digitalization.

Collaboration between principals and supervisors in supporting school digitalization can create an educational

ecosystem that is more adaptive and responsive to changes that occur. Through good coordination, clear division of tasks, and effective communication, principals and supervisors can work together to achieve a shared vision that leads to improved quality of learning through technology. To foster a culture of continuous improvement and collaboration, schools must invest in comprehensive, targeted professional development opportunities for their staff (AGIRDAG & MUIJS, 2023).

As a partner of the principal, the supervisor needs to identify the principal's commitment to change by exploring the level of change leadership capacity and the level of awareness of the principal to reflect. There are several indications that are least done by the principal and need to be observed by the school supervisor, including: a. identifying the commitment to change by the principal by exploring the level of change leadership capacity and the level of awareness of the principal to reflect; b. determine the appropriate mentoring strategy for each Education Unit based on the results of reflection; c. determine the appropriate Assistance method in accordance with the Assistance Strategy and work program of each Education Unit; d. prepare a Assistance Plan document (Director General of GTK, 2023). Through the right mentoring, it will provide a deep understanding of how to become a transformational leader. Thus, an understanding of transformational leadership will contribute to education leaders in developing more contextual and relevant leadership strategies (Congress A, 2023)

4. CONCLUSION

From the perspective of the role of supervisors, the strategies and methods of school principals in school digitalization show that cooperation between the two parties is very important in achieving common goals. Principals who are able to lead with vision, collaboration, and are proactive in integrating technology into school culture tend to achieve greater success.

In conclusion, principals have a key role to play in ensuring that school digitalization runs optimally, while supervisors provide the necessary support, direction, and framework to ensure the continuity and success of the transformation. Thus, the synergy between the principal and supervisors is a strong foundation in advancing school digitalization to improve the quality of education. The results of this research can be a guide for school principals and supervisors in developing collaborative strategies in an effort to realize a school that is oriented towards technology and innovation.

Based on the results of the study, the following are recommended:

- a. Supervisors can consider the ability of school principals to utilize ICT in schools and exercise technology leadership during the school digitalization process and ensure they can embed ICT in learning leadership to school management.
- b. Principals can continue to do and strengthen their technology leadership by maximizing support to

- c. teachers in the integration of ICT in school digitalization
- c. Teachers can integrate ICT more in the classroom, which offers a more redesigned and innovative learning experience that
- d. facilitating the transformation of the teaching and learning process.

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