

The Influence of Principals' Digital Leadership on Teacher Readiness in the Digital Transformation of Education

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Abstract

The digital transformation of education requires teachers' readiness to integrate technology into the learning process. This readiness is not only influenced by individual factors, but also influenced by organizational support, including the leadership role of the principal. This study aims to analyze the influence of school principals' digital leadership on teachers' readiness in the digital transformation of education. The research uses a quantitative approach with an explanatory research design. The research sample consisted of 50 elementary school teachers in Merangin Regency, Jambi Province who were selected using the purposive sampling technique. Data were collected through a Likert scale questionnaire and analyzed using descriptive statistics and simple linear regression. The results showed that the digital leadership of school principals was in the high category with an average score of 30.50, while teacher readiness was also in the high category with an average score of 31.08. The results of the regression test showed that the digital leadership of school principals had a positive and significant effect on teacher readiness ($\beta = 0.875$; $t = 12.516$; $p < 0.05$). The value of the determination coefficient ($R^2 = 0.765$) showed that digital leadership contributed 76.5% to teacher readiness. These findings affirm the importance of strengthening the digital leadership of school principals in supporting the success of digital transformation of education.

Keywords: Digital Leadership, Principal, Teacher Readiness

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INTRODUCTION

The development of information and communication technology has brought significant changes in various sectors of life, including the education sector. The use of digital technology not only changes the way individuals access information, but also affects the learning process, school management in the educational environment. These changes encourage the birth of various innovations that require educational institutions to be able to adapt to the times (Masaeed et al., 2025). The integration of technology in education is one of the strategies implemented to improve the effectiveness, efficiency, and quality of educational services (Prayoonvong & Limwongthong, 2025). Digital transformation has become an inseparable part of efforts to improve the quality of education in the modern era.

Digital transformation of education is a process of change that involves the systematic use of digital technology in all aspects of education implementation. The implementation of digital transformation not only focuses on the provision of technological tools, but also

includes changes in work culture, learning patterns, and education management systems (Ntavlourou et al., 2026). The presence of various digital learning platforms, learning management systems, and educational applications has changed the learning paradigm from conventional to more flexible, collaborative, and student-centered (Hamzah et al., 2025). The educational environment is required to be able to develop a digital ecosystem that supports the learning process in a sustainable manner (Nguyen et al., 2023). The success of digital transformation of education is highly dependent on the readiness of all human resources involved in the education process.

Teachers have a strategic role in determining the success of digital transformation of education because they are the main implementers of the learning process in the classroom. The role of teachers in the digital era is no longer limited to the delivery of learning materials, but also includes the ability to integrate technology in teaching and learning activities (Rahmawati et al., 2025). Mastery of technology allows teachers to create learning experiences that are more interactive, creative, and in accordance with the needs of 21st century students (Suryaman & Setiyani, 2025). This ability needs to be supported by adequate readiness so that teachers are able to face various changes that occur in the world of education (Kamran, 2025). A high level of teacher readiness will facilitate the process of adapting to various innovations and technology-based education policies.

Teacher readiness in the digital transformation of education refers to conditions that show the ability and willingness of teachers to accept, utilize, and integrate digital technology in learning practices. This readiness includes aspects of knowledge, skills, attitudes, and self-confidence in using technology effectively (Althubyani, 2024). Teachers who have high readiness tend to be more open to change, able to adapt to technological developments, and have strong motivation to improve the quality of learning (Saeed & Kang, 2024). On the other hand, low teacher readiness can hinder the implementation of education digitalization programs even though technological facilities are well available (Sari et al., 2025). Therefore, identifying factors that affect teachers' readiness is important to support the success of educational digital transformation.

Teachers' readiness to face digital transformation is influenced by individual and organizational factors. Individual factors include digital competence, experience in using technology, motivation, and self-efficacy of teachers in utilizing learning technology (Alajmi, 2022). Organizational factors include institutional support, school culture, availability of technological infrastructure, and leadership qualities implemented in the school environment. The existence of organizational factors is often a determinant of the success of the implementation of change because it can create conditions that support or hinder teachers' adaptation to digital transformation (Anwar & Warman, 2025). This perspective shows that the success of digital transformation cannot be fully imposed on teachers as individuals, but rather requires support from the school organizational system as a whole.

The principal as an education leader has an important responsibility in directing the process of change that occurs in the school environment. The role of the principal is not only related to the administrative functions and management of educational resources, but also includes the ability to lead innovation and organizational transformation (B. et al., 2025). The changes that occur due to technological developments require school principals to have leadership skills that are in accordance with the demands of the digital era (Pietsch & Mah, 2024). Leadership that is able to accommodate technological developments is needed so that schools can adapt effectively to changes in the educational environment (Fitria et al., 2025). This need gave birth to the concept of digital leadership as one of the relevant leadership approaches in facing the challenges of 21st century education.

Principal digital leadership refers to the ability of leaders to utilize digital technology to support the management process, communication, decision-making, and development of

educational innovations. School principals who have digital leadership are able to build a clear digital vision, optimize the use of technology in school management, and encourage school residents to utilize technology productively (Anwar & Warman, 2025). This ability is becoming increasingly important because digital transformation requires consistent policy direction and support from school leaders (Fitria et al., 2025). School environments led by digitally oriented principals tend to be more open to innovation and change (Umah et al., 2023). This situation can create a work climate that supports increasing teachers' readiness in facing the digital transformation of education.

The implementation of digital leadership can be realized through various forms of support provided by school principals to teachers. This support includes the provision of technology facilities, the implementation of digital competency training, strengthening the culture of innovation, and the development of technology-based communication systems (Carvalho & Azevedo, 2024). The presence of adequate support can increase teachers' confidence in using technology and encourage their involvement in various educational digitalization programs (Luo et al., 2024). A supportive work environment also allows teachers to gain wider opportunities to develop digital competencies in a sustainable manner (Huiling & Ismail, 2025). This condition shows that the digital leadership of school principals has the potential to be an important factor in shaping teachers' readiness to face the digital transformation of education.

Studies on educational digital transformation have been conducted by many researchers with diverse focuses. Most previous research has focused more on teachers' digital competence, digital literacy, the effectiveness of the use of learning technology, and individual factors that affect teachers' adaptation to technological changes (Haryanti & Purbojo, 2024). Studies that discuss the influence of digital leadership of school principals on teacher readiness are still relatively limited, especially in the context of basic education in Indonesia. These limitations show that there is a research space that needs to be developed to enrich the treasures of education management science. The development of research on the aspect of digital leadership is important considering the role of school principals as the main driver of transformation at the education unit level.

This phenomenon shows that the success of digital transformation of education requires attention not only to improving teacher competence, but also to strengthening the leadership capacity of school principals. School principals who are able to lead change digitally are believed to be able to create an organizational environment that supports teachers' readiness to face educational technology developments. Understanding the relationship between digital leadership and teacher readiness is important to produce a more effective school management strategy in the face of the digital era. The results of the research are expected to make a theoretical contribution to the development of education management science as well as a practical contribution for policy makers in designing programs to strengthen school digital transformation. This study aims to analyze the influence of digital leadership of school principals on teachers' readiness in digital transformation of education.

RESEARCH METHOD

This study uses a quantitative approach with an explanatory research design to analyze the influence of school principals' digital leadership on teachers' readiness in digital transformation of education. The research was carried out on elementary school teachers in Merangin Regency, Jambi Province. The research population consisted of all teachers who were the subjects of the study, while the sample was determined using purposive sampling techniques with the criteria of teachers who are active and involved in the use of digital technology in learning. Data collection was carried out using a closed questionnaire with a five-level Likert scale, namely strongly disagree, disagree, hesitate, agree, and strongly agree.

The research instrument was prepared to measure the variables of digital leadership of school principals which include digital vision, technology support, digital communication, digital competency development, and innovation culture, as well as teacher readiness variables which include knowledge readiness, skills, attitudes, technology integration, and digital self-efficacy.

The research data was analyzed using descriptive statistics and inferential statistics. Descriptive analysis was used to describe the level of digital leadership of school principals and teachers' readiness in the digital transformation of education based on grade average, percentage, and standard deviation. The quality of the instrument is tested through validity and reliability tests before being used in data collection. Inferential analysis was performed using simple linear regression to test the influence of independent variables on dependent variables after meeting prerequisite tests which included normality, linearity, and heteroscedasticity tests. Hypothesis testing was carried out using a t-test at a significance level of 0.05, while the amount of the principal's digital leadership contribution to teacher readiness was determined through the determination coefficient (R^2).

FINDINGS AND DISCUSSION

The processing of research data was carried out using descriptive statistics and inferential statistics with the help of SPSS version 25 for Windows. Descriptive analysis was used to describe the variable conditions of the digital leadership of school principals and teachers' readiness in the digital transformation of education. Hypothesis testing was carried out using simple linear regression after the data met the analysis prerequisite test.

Table 1. Descriptive Statistics Results of School Principals' Digital Leadership

N Valid	50
Missing	0
Mean	30.50
Median	29.00
Mode	36
Std. Deviation	3.856
Variance	14.867
Minimum	24
Maximum	36

Table 1 shows that the principal's digital leadership variable has an average score of 30.50 with a standard deviation of 3.856. These results show that teachers' perceptions of school principals' digital leadership practices are in the high category.

Table 2. Categories of Digital Leadership Principals

Category	Frequency	Percentage
Medium	1	2,0%
Height	49	98,0%

Table 3. Descriptive Statistics Results of Teacher Readiness

N Valid	50
Missing	0
Mean	31.08
Median	31.50
Mode	27
Std. Deviation	3.702
Variance	13.708
Minimum	26
Maximum	36

Based on Table 3, teachers' readiness in the digital transformation of education has an average score of 31.08 with a standard deviation of 3.702. These findings show that teachers have a high level of readiness in facing the digital transformation of education.

Table 4. Teacher Readiness Category

Category	Frequency	Percentage
Height	50	100,0%

Simple Linear Regression Test Results

Table 5. Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	514.130	1	514.130	156.638	.000
Residual	157.550	48	3.282		
Total	671.680	49			

The results of the ANOVA test showed a value of $F = 156.638$ with a significance of 0.000 ($p < 0.05$), which means that the regression model is feasible to test the influence of digital leadership of school principals on teacher readiness.

Tabel 6. Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	N
0.875	0.765	0.761	1.812	50

The R Square value of 0.765 indicates that 76.5% of the variation in teacher readiness can be explained by the principal's digital leadership, while 23.5% is influenced by other factors outside of the research model.

Tabel 7. Coefficients^a

Model	B	Std. Error	Beta	t	Sig.
(Constant)	5.457	2.063		2.645	.011
Digital Leadership	0.840	0.067	0.875	12.516	.000

The results of the t-test showed that the digital leadership of school principals had a positive and significant effect on teachers' readiness in the digital transformation of education ($\beta = 0.875$; $t = 12.516$; $p = 0.000$). Thus, the research hypothesis is accepted.

Discussion

The digital leadership of school principals was in the high category with an average score of 30.50. These findings indicate that school principals have been able to carry out leadership functions that are adaptive to the development of digital technology. The high level of digital leadership shows that school principals have the ability to build a school's digital vision, encourage the use of technology in the learning process, and create a work culture that supports innovation. This condition is an indicator that digital transformation in the school environment has received adequate support from the leadership aspect. The existence of leaders who have a digital orientation is an important factor in encouraging organizational change towards a more modern education system and responsive to technological developments.

These findings are in line with the concept of digital leadership that emphasizes the ability of leaders to leverage technology to support organizational effectiveness and create sustainable innovation. Principals who are able to integrate technology in the managerial process will more easily direct school staff to adapt to change (Suparno & Pujiyanto, 2025). This ability not only has an impact on school management, but also affects the readiness of

teachers in implementing technology in the learning process. Therefore, digital leadership is one of the competencies that school principals need to have in the era of digital transformation of education.

The teachers' readiness in the digital transformation of education is in the high category with an average score of 31.08. All respondents were in the high category, which shows that teachers have good readiness to face changes in technology-based education. The high readiness of teachers can be seen from their ability to utilize digital technology, accept changes, and integrate various digital devices into the learning process. These findings show that teachers have realized the importance of mastering technology as part of the demands of professionalism in the digital era. This readiness is an important capital in supporting the successful implementation of various digital transformation programs in education.

The high level of readiness can be influenced by the increasing use of technology in learning activities and school administration. Teachers' experience in using various digital platforms also strengthens their ability to adapt to change. This condition shows that digital transformation is no longer just a policy, but has become part of daily educational practices (Alcantara, 2023). Teachers who have high readiness tend to be more receptive to innovation and are able to utilize technology to improve the quality of learning. Thus, teacher readiness is one of the indicators of school success in facing digital-based education changes.

The digital leadership of school principals has a positive and significant effect on teachers' readiness in the digital transformation of education. A significance value of 0.000 less than 0.05 indicates that the research hypothesis is accepted. These findings indicate that the better the digital leadership implemented by school principals, the higher the level of teachers' readiness to face the digital transformation of education. The results of the study confirm that the success of digital transformation is not only determined by the individual abilities of teachers, but also influenced by the quality of leadership in schools. The role of school principals is very important in creating an environment that supports technology-based change and innovation.

This influence can be explained through the ability of the principal to build a clear digital vision and provide direction of change to all school residents. School principals who have digital leadership are able to communicate the goals of digital transformation effectively so that teachers understand the benefits and urgency of using technology in education. A good understanding of the purpose of change will increase teachers' motivation and readiness to adapt (Tømte, 2024). This situation shows that digital leadership plays a key driver in building human resource readiness in the school environment. Therefore, the success of the digital transformation of education is greatly influenced by the ability of school principals to lead change.

The results showed a determination coefficient value (R^2) of 0.765. This value shows that the digital leadership of school principals contributes 76.5% to teachers' readiness in the digital transformation of education. The percentage suggests that most of the variation in teacher readiness can be explained by the quality of digital leadership implemented by school principals. However, there are still 23.5% of other factors that affect teacher readiness and have not been analyzed in this study. These factors can be in the form of teachers' digital competence, work motivation, experience in using technology, infrastructure support, and school organizational culture. The existence of these other factors shows that the digital transformation of education is a complex process and is influenced by various interrelated aspects (Niță & Guțu, 2023). The next research can examine these factors to gain a more comprehensive understanding of teachers' readiness in facing the digital transformation of education. Thus, the results of this research can be the basis for the development of further research in the field of education management.

CONCLUSION

The results of the study show that the digital leadership of school principals and the readiness of teachers in the digital transformation of education are in the high category. These findings indicate that school principals have been able to implement leadership practices that support the use of digital technology, while teachers have good readiness in terms of knowledge, skills, attitudes, and self-efficacy to integrate technology into the learning process. This condition reflects the existence of adequate organizational support and readiness of human resources in facing the demands of digital transformation of education. The results of a simple linear regression analysis show that the digital leadership of school principals has a positive and significant effect on teachers' readiness in the digital transformation of education. A significance value of 0.000 (< 0.05) and a determination coefficient (R^2) of 0.765 showed that the digital leadership of school principals contributed 76.5% to teacher readiness. These findings confirm that the better the digital leadership implemented by school principals, the higher the readiness of teachers in facing the digital transformation of education, so that strengthening digital leadership competencies is one of the important strategies in supporting the success of educational transformation in the digital era.

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