

**THE INFLUENCE OF PRINCIPAL'S TRANSFORMATIONAL LEADERSHIP
ON IMPROVING TEACHERS' DIGITAL PERFORMANCE
AT SMA NEGERI 1 TELUKJAMBE**

Ilma Novelia Winata¹, Maman Suryaman²

Master Program in Educational Administration, Universitas Singaperbangsa Karawang^{1,2}

e-mail: 2510632280005@student.unsika.ac.id¹, maman.suryaman@fkip.unsika.ac.id²

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ABSTRAK

Revolusi Industri 4.0 dan transformasi digital telah mengubah lanskap pendidikan, menuntut guru memiliki kompetensi digital yang kuat. Namun, banyak guru masih kurang memanfaatkan alat digital sehingga terjadi kesenjangan antara harapan dan realitas. Kepala sekolah berperan strategis untuk menjembatani kesenjangan ini melalui kepemimpinan yang efektif. Penelitian ini bertujuan menganalisis pengaruh kepemimpinan transformasional kepala sekolah terhadap kinerja digital guru di SMA Negeri 1 Telukjambe. Pendekatan kuantitatif dengan desain korelasional digunakan pada populasi 52 guru dengan sampel 50 guru yang dipilih secara acak sederhana. Data dikumpulkan menggunakan kuesioner yang divalidasi untuk mengukur kepemimpinan transformasional (pengaruh ideal, motivasi inspiratif, stimulasi intelektual, perhatian individual) dan kinerja digital (penggunaan LMS, pembuatan konten digital, pemanfaatan media digital, komunikasi digital, pengelolaan nilai). Analisis regresi linear berganda dengan SPSS menunjukkan bahwa kepemimpinan transformasional berpengaruh signifikan terhadap kinerja digital ($R^2 = 0,672$). Motivasi inspiratif dan stimulasi intelektual merupakan prediktor terkuat. Simpulannya, kepala sekolah perlu memperkuat perhatian individual melalui mentoring terstruktur, sementara pembuat kebijakan perlu mendukung pelatihan digital dan infrastruktur.

Kata Kunci: *Kepemimpinan Transformasional, Kinerja Digital, Guru, Kuantitatif, Regresi*

ABSTRACT

The Industrial Revolution 4.0 and digital transformation have reshaped education, demanding strong digital competencies from teachers. However, many teachers still underutilize digital tools, creating a gap between expectations and reality. Principals play a strategic role in bridging this gap through effective leadership. This study aims to analyze the influence of the principal's transformational leadership on teachers' digital performance at SMA Negeri 1 Telukjambe. A quantitative correlational design was employed with a population of 52 teachers and a sample of 50 selected through simple random sampling. Data were collected using validated questionnaires measuring transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, individualized consideration) and digital performance (LMS usage, digital content creation, digital media utilization, digital communication, grade data management). Multiple linear regression analysis using SPSS showed that transformational leadership significantly influences digital performance ($R^2 = 0.672$). Inspirational motivation and intellectual stimulation were the strongest predictors. The study concludes that principals should strengthen individualized consideration through structured mentoring, while policymakers should support digital training and infrastructure.

Keywords: *Transformational Leadership, Digital Performance, Teachers, Quantitative, Regression*





INTRODUCTION

The rapid advancement of digital technology in the era of the Industrial Revolution 4.0 and Society 5.0 has transformed educational systems worldwide, requiring schools to adapt to increasingly technology-based learning environments. Teachers are expected to possess strong digital competencies and demonstrate effective digital performance in carrying out instructional, administrative, and communication tasks (Fitriadi et al., 2026). Digital-based teacher performance encompasses the ability to utilize Learning Management Systems (LMS), develop digital learning content, employ interactive learning media, communicate through digital platforms, and manage educational data electronically (Nurhayati et al., 2024). These competencies are essential to support effective, innovative, and student-centered learning in contemporary education.

Ideally, teachers should be able to integrate digital technology into their professional practices to enhance learning quality and educational outcomes. However, empirical evidence indicates that many teachers still face challenges in utilizing digital technologies optimally. Several studies have reported limitations in teachers' digital literacy, inconsistent use of learning platforms, and difficulties in adapting to technology-driven instructional approaches (Mulyadi, 2025; Sewang, 2025). This condition demonstrates a gap between the expected level of digital performance and the actual implementation of digital-based learning practices in schools. Such a gap may hinder the success of educational digital transformation initiatives and reduce the effectiveness of technology integration in learning.

One factor that is considered crucial in addressing this challenge is school leadership. Principals play a strategic role in creating a supportive environment for innovation, encouraging technology adoption, and fostering teachers' professional growth. Among various leadership approaches, transformational leadership is widely recognized as an effective model for managing organizational change and promoting innovation. According to Bass (1985), transformational leadership consists of four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Through these dimensions, leaders can inspire followers, encourage creative thinking, and support continuous professional development. Recent studies have confirmed that transformational leadership remains highly relevant in contemporary educational settings, particularly in fostering teacher commitment, innovation, and organizational effectiveness during digital transformation processes (Berkovich & Hassan, 2023; Habibah & Juhari, 2025). Furthermore, transformational leaders are more likely to create supportive environments that encourage adaptation to technological change and the implementation of innovative teaching practices, which are essential in the digital era.

Recent studies have demonstrated that transformational leadership positively influences employee performance, organizational commitment, work motivation, and job satisfaction (Hartono, 2026; Octaviany et al., 2025). In educational settings, transformational leadership has also been associated with teacher effectiveness, innovation, and professional engagement (Sewang, 2025). These findings suggest that transformational leadership plays an important role in fostering positive organizational outcomes by motivating individuals, supporting professional growth, and encouraging continuous improvement. As educational institutions continue to adapt to technological advancements, leadership practices that promote innovation and organizational change have become increasingly important.

Nevertheless, research examining the relationship between principals' transformational leadership and teachers' digital performance remains relatively limited. Existing studies predominantly focus on general teacher performance, digital competence, or organizational





performance in higher education and non-educational sectors (Nurhayati et al., 2024; Mulyadi, 2025; Fitriadi et al., 2026). As a result, empirical evidence regarding how transformational leadership contributes specifically to teachers' digital performance at the senior high school level is still insufficient. This gap highlights the need for further investigation to better understand the role of school leadership in supporting teachers' adaptation to digital transformation and technology-enhanced teaching practices.

Based on this research gap, the present study investigates the influence of principals' transformational leadership on teachers' digital performance at SMA Negeri 1 Telukjambe, Karawang Regency. The novelty of this study lies in its focus on digital teacher performance as the dependent variable and its examination of the contribution of each transformational leadership dimension in the context of secondary education digital transformation. Unlike previous studies that primarily assessed general teacher performance or digital competence separately, this research integrates transformational leadership theory with digital performance indicators to provide a more comprehensive understanding of leadership effectiveness in supporting educational digitalization.

Accordingly, this study seeks to answer the following research questions: (1) What is the level of the principal's transformational leadership? (2) What is the level of teachers' digital performance? (3) How does transformational leadership influence teachers' digital performance? and (4) Which dimensions of transformational leadership contribute most significantly to teachers' digital performance? The findings are expected to contribute theoretically to the development of educational leadership literature and practically to assist school leaders and policymakers in strengthening digital transformation initiatives in schools.

METHODS

This study employed a quantitative correlational research design to examine the relationship between the principal's transformational leadership and teachers' digital performance. The independent variable was transformational leadership, while the dependent variable was teachers' digital performance. The study was conducted at SMA Negeri 1 Telukjambe, Karawang Regency. The population consisted of all 52 teachers working at SMA Negeri 1 Telukjambe. The sample size was determined using Slovin's formula with a 5% margin of error, resulting in a minimum sample of 46 respondents. To increase the representativeness of the data and anticipate possible non-response, 50 teachers were selected as research participants through simple random sampling.

The independent variable, transformational leadership, was measured through four dimensions: idealized influence (X_1), inspirational motivation (X_2), intellectual stimulation (X_3), and individualized consideration (X_4). The dependent variable, teachers' digital performance, was measured using five indicators: Learning Management System (LMS) usage (Y_1), digital content creation (Y_2), digital media utilization (Y_3), digital communication (Y_4), and digital grade data management (Y_5). Data were collected using a structured questionnaire based on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to data collection, the instrument underwent expert judgment to ensure content validity and was subsequently pilot-tested with 30 respondents. The validity test results indicated that all questionnaire items met the required validity criterion ($r > 0.361$), while the reliability test showed satisfactory internal consistency with Cronbach's alpha coefficients exceeding 0.70 for all variables.

Data analysis was conducted using IBM SPSS Statistics version 25. Descriptive statistics were first employed to describe the levels of transformational leadership and teachers'



digital performance. Before hypothesis testing, classical assumption tests were performed, including normality, multicollinearity, and heteroscedasticity tests, to ensure the suitability of the regression model. To examine the effect of transformational leadership on teachers' digital performance, multiple linear regression analysis was applied using the following model:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

where Y represents teachers' digital performance, a is the regression constant, b_1 – b_4 are the regression coefficients, X_1 – X_4 represent the dimensions of transformational leadership, and e denotes the error term. Hypothesis testing was carried out using partial t-tests to determine the individual effect of each leadership dimension and an F-test to assess the overall significance of the regression model. The coefficient of determination (R^2) was used to measure the proportion of variance in teachers' digital performance explained by transformational leadership.

RESULT AND DISCUSSION

Result

A total of 50 teachers participated in this study. The demographic profile showed that most respondents were aged between 30 and 45 years and had between 5 and 15 years of teaching experience. Furthermore, a large proportion of teachers had attended digital training programs during the previous two years, reflecting their engagement with educational technology development. These characteristics indicate that the participants had varying levels of professional experience while maintaining exposure to digital learning initiatives. Such demographic information provides important context for understanding the implementation of transformational leadership and teachers' digital performance within the school environment. The descriptive results regarding the levels of transformational leadership and teachers' digital performance are presented in Table 1.

Table 1. Levels of Transformational Leadership and Teachers' Digital Performance

Variable/Dimension	Mean Score	Category
Idealized influence (X_1)	4.25	High
Inspirational motivation (X_2)	4.60	Very high
Intellectual stimulation (X_3)	4.55	Very high
Individualized consideration (X_4)	3.80	Moderate
Transformational leadership (X)	4.30	High
LMS usage (Y_1)	3.90	Moderate
Digital content creation (Y_2)	3.70	Moderate
Digital media utilization (Y_3)	3.75	Moderate
Digital communication (Y_4)	4.40	High
Grade data management (Y_5)	3.80	Moderate
Digital performance (Y)	3.91	Moderate

As presented in Table 1, transformational leadership was overall high, with inspirational motivation and intellectual stimulation reaching very high levels. Teachers' digital performance was moderate overall, with digital communication being the strongest indicator. These findings

suggest that school leaders generally demonstrated leadership practices that support innovation, motivation, and professional growth among teachers. At the same time, the variation observed across the dimensions of digital performance indicates that teachers' adaptation to digital technologies may differ depending on the specific competencies involved. Prior to hypothesis testing, classical assumption tests were conducted to ensure the suitability of the data for regression analysis. The results showed that the data were normally distributed (Kolmogorov–Smirnov sig. > 0.05), with no multicollinearity (VIF < 10) and no heteroscedasticity (Glejser sig. > 0.05). The results of the multiple linear regression analysis are presented in Table 2.

Table 2. Multiple Linear Regression Results

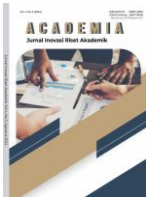
Predictor	Coefficient (b)	t-value	p-value
Constant (a)	1.205	–	0.000
Idealized influence (X ₁)	0.180	2.450	0.018
Inspirational motivation (X ₂)	0.320	4.120	0.000
Intellectual stimulation (X ₃)	0.290	3.850	0.000
Individualized consideration (X ₄)	0.150	2.010	0.050

Regression equation:
 $Y = 1.205 + 0.180X_1 + 0.320X_2 + 0.290X_3 + 0.150X_4$

As presented in Table 2, the multiple linear regression analysis showed that transformational leadership had a significant positive effect on teachers' digital performance. The overall regression model was statistically significant ($F = 22.34$, $p < 0.001$), indicating that the four dimensions of transformational leadership jointly contributed to the prediction of teachers' digital performance. The coefficient of determination ($R^2 = 0.672$) revealed that 67.2% of the variance in teachers' digital performance was explained by the independent variables included in the model. This finding suggests that transformational leadership represents an important organizational factor associated with teachers' ability to perform effectively in digital learning environments. Furthermore, all dimensions of transformational leadership were identified as significant predictors ($p \leq 0.05$), with inspirational motivation ($b = 0.320$) and intellectual stimulation ($b = 0.290$) emerging as the strongest contributors. These results indicate that leadership practices that inspire teachers and encourage innovative thinking may play a particularly important role in supporting the development of digital teaching performance. More detailed information regarding the regression coefficients for each predictor is presented in Table 2.

Discussion

The findings indicate that transformational leadership was perceived at a high level, particularly in the dimensions of inspirational motivation and intellectual stimulation. This result suggests that the principal has been effective in communicating a clear vision for digital transformation and fostering an environment that encourages innovation and continuous learning among teachers. From the perspective of transformational leadership theory, these dimensions are essential because they inspire followers to move beyond routine practices and embrace organizational change (Bass, 1985). Recent studies have further demonstrated that transformational leadership remains a critical factor in promoting teacher commitment, educational innovation, and school effectiveness in rapidly changing educational environments



(Kareem et al., 2023). This finding is consistent with Restiani et al. (2024), who emphasized that transformational leadership contributes positively to teachers' professional attitudes and workplace outcomes by fostering supportive relationships, motivation, and organizational commitment. In the context of educational digitalization, teachers are more likely to adopt new technologies when leaders provide a compelling vision, encourage experimentation with innovative teaching approaches, and cultivate a supportive culture for professional growth and collaboration (Berkovich & Hassan, 2023).

The prominence of inspirational motivation and intellectual stimulation also reflects the growing importance of leadership practices that support technology integration in schools. Forsström and Amdam (2026) argued that school leaders play a crucial role in creating conditions that encourage teachers to develop digital competencies and engage with emerging technologies. Similarly, Wang et al. (2026) found that leadership practices that promote innovation and continuous professional learning can strengthen teachers' readiness to implement technology-based instruction. In addition, Yoon et al. (2026) reported that supportive and forward-looking leadership contributes significantly to teachers' willingness to adopt digital tools and integrate them into classroom practices. Collectively, these studies indicate that school leaders who actively foster innovation and professional growth can substantially enhance teachers' digital competence and readiness for technology-enhanced teaching. A similar tendency can be observed in schools that actively implement technology-supported learning systems. Umar et al. (2024) reported that the implementation of Smart School technology contributed to strengthening learning processes and supporting educational development through the effective utilization of digital technologies. Therefore, the high scores obtained in these dimensions indicate that transformational leadership serves not only as an administrative function but also as a catalyst for educational innovation and digital transformation.

In contrast, individualized consideration obtained comparatively lower scores, although it remained within the high category. This finding may indicate that some teachers, particularly those with lower levels of digital competence or longer teaching experience, require more personalized guidance and mentoring. According to transformational leadership theory, individualized consideration enables leaders to recognize individual needs and provide tailored support for professional growth. Previous studies have similarly reported that personalized leadership support contributes significantly to teachers' confidence and willingness to adopt digital technologies in their teaching practices (Gui et al., 2026; Forsström & Amdam, 2026). Consequently, strengthening individualized mentoring may help reduce disparities in digital performance among teachers.

The results further revealed that teachers' digital performance was at a moderate level. Although digital communication emerged as the strongest indicator, digital content creation and digital media utilization were relatively weaker. This pattern suggests that teachers are generally comfortable using digital tools for communication and administrative purposes but may still face challenges in designing innovative digital learning materials. Such findings are consistent with recent research indicating that teachers often demonstrate higher proficiency in basic digital communication than in more advanced competencies, such as content development, multimedia integration, and technology-enhanced instructional design (Wang et al., 2026; Yoon et al., 2026). This disparity highlights the need for continuous professional development programs that focus not only on technology use but also on pedagogical innovation in digital learning environments.





The regression analysis demonstrated that transformational leadership significantly influenced teachers' digital performance, explaining 67.2% of the variance in the dependent variable. This substantial contribution indicates that leadership is a critical organizational factor in facilitating digital transformation within schools. The finding supports previous studies that identified transformational leadership as a significant predictor of teacher performance, organizational commitment, innovation, and job satisfaction in educational settings (Hardianto et al., 2025; Sun & Tang, 2026; Yong & Zhang, 2025). This result is further supported by Utami et al. (2024), who found that principals' transformational leadership positively influences teacher performance and contributes to improvements in learning quality within schools. The stronger effects of inspirational motivation and intellectual stimulation further suggest that leaders who encourage creativity, problem-solving, and professional growth are more successful in fostering teachers' digital engagement.

These findings can also be interpreted through Self-Determination Theory proposed by Deci and Ryan (2000). The theory posits that individuals are more intrinsically motivated when their needs for autonomy, competence, and relatedness are fulfilled. Transformational leaders contribute to these psychological needs by empowering teachers, recognizing their achievements, and fostering collaborative professional relationships. As a result, teachers become more motivated to improve their digital competencies and integrate technology into their instructional practices. Recent evidence supports this perspective by showing that the satisfaction of autonomy, competence, and relatedness needs plays a significant role in fostering teachers' digital competence development and engagement with technology-enhanced learning environments (Chiu et al., 2024). Therefore, the influence of transformational leadership on digital performance may operate not only through organizational mechanisms but also through motivational and psychological processes.

From a practical perspective, the findings suggest that school principals should continue strengthening inspirational motivation and intellectual stimulation while providing more individualized support for teachers who experience difficulties in adapting to digital technologies. Educational authorities should also invest in sustainable digital training programs and adequate technological infrastructure to support teachers' professional development. Furthermore, collaborative learning communities may serve as effective platforms for sharing experiences, best practices, and innovative strategies related to technology integration in teaching and learning.

Taken together, the findings suggest that transformational leadership functions as more than a managerial approach in the context of educational digital transformation. Its influence extends beyond directing organizational change to shaping the conditions that enable teachers to develop digital competencies and adapt to evolving educational demands. The significant contribution of transformational leadership to teachers' digital performance indicates that successful technology integration is not solely determined by the availability of digital infrastructure or technical resources. Rather, it depends on the extent to which school leaders can inspire a shared vision, encourage innovation, and create supportive professional environments where teachers feel confident to experiment with new technologies. Consequently, educational digital transformation should be viewed as a human-centered process in which leadership plays a pivotal role in aligning technological advancement with teachers' professional growth and instructional effectiveness.





CONCLUSION

This study confirms that transformational leadership plays a crucial role in enhancing teachers' digital performance within the context of educational digital transformation. The findings demonstrate that leadership practices characterized by inspirational motivation and intellectual stimulation effectively encourage teachers to engage with digital technologies and adopt innovative teaching approaches. Teachers are more likely to embrace digital tools when they receive clear direction, encouragement, and opportunities to experiment with new instructional methods. These results indicate that successful digital transformation in schools depends not only on technological infrastructure but also on leadership that promotes professional growth, organizational commitment, and a culture of continuous learning.

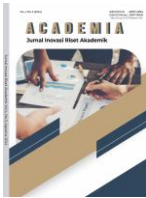
The study contributes to the educational leadership literature by highlighting transformational leadership as an important organizational factor influencing teachers' digital performance at the secondary school level. The findings suggest that school leaders must balance a strong strategic vision with individualized support to address differences in teachers' digital competence and readiness for change. Leadership that combines guidance, motivation, and professional support can help teachers overcome challenges associated with technology integration. Therefore, schools and educational authorities should strengthen leadership development programs, provide sustainable digital training opportunities, and encourage collaborative learning environments that facilitate the exchange of effective digital teaching practices.

Despite its contributions, this study has several limitations that should be acknowledged. The research was conducted in a single school and relied primarily on self-reported questionnaire data, which may restrict the generalizability of the findings to other educational contexts. Future research could expand the scope by involving multiple schools and educational levels, thereby providing a broader perspective on the relationship between transformational leadership and digital performance. In addition, the use of mixed-method or longitudinal approaches and the inclusion of variables such as digital competence, organizational culture, technology acceptance, and teacher self-efficacy may offer a more comprehensive understanding of the mechanisms through which transformational leadership supports educational digital transformation.

DAFTAR PUSTAKA

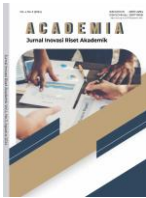
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