

Transformational Leadership and School Innovation Culture On Teacher's Digital Creativity: The Mediating Role of Technological Self Efficacy In The Land of Java Man Regency

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Abstract.

This study examines the empirical phenomenon of teachers' digital creativity disparities amidst rapid educational digital transformation, investigating the influence of transformational leadership and school innovation culture on teachers' digital creativity, mediated by technological self-efficacy. Employing an explanatory quantitative survey design, this cross-sectional study surveyed a saturated sample of 249 junior high school (SMP) teachers across 79 public and private schools in Sragen Regency (consisting of 166 MGMP subject-matter teacher administrators, 45 teachers from SMPN 1 Karangmalang, and 38 teachers from SMPN 4 Sragen). Data were gathered via structured 5-point Likert questionnaires and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) on SmartPLS 4. The empirical results demonstrate that all direct and indirect hypotheses are supported ($p < 0.05$). Transformational leadership positively impacts teachers' digital creativity directly ($\beta = 0.149$, $t = 2.485$, $p = 0.013$) and through technological self-efficacy mediation ($\beta = 0.149$, $t = 2.485$, $p = 0.013$). School innovation culture exerts a stronger direct effect on digital creativity ($\beta = 0.274$, $t = 3.657$, $p = 0.000$) and indirect effect via technological self-efficacy ($\beta = 0.274$, $t = 4.039$, $p = 0.000$). Crucially, technological self-efficacy emerged as the most dominant determinant of teachers' digital creativity ($t = 7.966$, $p = 0.000$, $f^2 = 0.557$), acting as a complementary partial mediator. The structural model demonstrates robust predictive power ($R^2 = 0.720$, $GoF = 0.692$). Theoretically, these findings enrich Social Cognitive Theory and educational leadership paradigms. Practically, school leaders and education authorities must cultivate a collaborative climate and foster internal digital self-efficacy rather than relying solely on top-down administrative compliance.

Keywords: Digital Creativity; Transformational Leadership; School Innovation Culture; Technological Self-Efficacy and PLS-SEM.

I. INTRODUCTION

The development of digital technology has driven fundamental changes in the paradigm of education delivery at both the global and national levels. Digital transformation focuses not only on the procurement of hardware and physical network infrastructure in schools, but also substantially demands fundamental changes in how educators design, implement, evaluate, and update learning ecosystems. In the 21st-century learning landscape, mastering basic technical skills in operating devices is no longer sufficient. Teachers are required to possess high levels of digital creativity, namely the capacity to transform instructional ideas into interactive digital media, develop adaptive learning content, and create collaborative and learner-centered learning experiences (Batuchina & Melnikova, 2025; Cojocariu & Boghian, 2024). Therefore, digital creativity has evolved into a key pillar of educator professionalism in facing the dynamic and complex demands of contemporary instruction (Anderson et al., 2022).

Legally and normatively, education reform in Indonesia has prioritized the acceleration of digital transformation as a driving force for improving learning quality. The implementation of the Independent Curriculum mandates a shift in the role of teachers from conventional instructors to facilitators of adaptive, innovative, and student-centered learning. This commitment is formally integrated through Sragen Regency Regulation Number 6 of 2024, which establishes educational digitalization as a strategic agenda for improving regional education quality. This policy is reinforced by Regulation of the Minister of Primary and Secondary Education (Permendikdasmen) Number 7 of 2025, which emphasizes that school leadership must transform into transformational leadership to foster innovative, inclusive, and technologically responsive learning communities. This series of regulations emphasizes the systemic expectation that schools must construct an integrated digital ecosystem that combines adaptive leadership, a supportive organizational climate, and teacher preparedness.

Despite the widespread rollout of regulations and infrastructure allocation, the reality at the educational unit level demonstrates a sharp disparity between the availability of digital resources and creative

pedagogical implementation in the classroom. The increase in accessibility to digital devices and internet connectivity has not been directly proportional to the increase in teachers' digital creativity in designing immersive learning scenarios. Most teachers still utilize technology as a limited, mechanical administrative tool, such as compiling digital files, filling in online attendance, or converting conventional materials into static slide formats without meaningful pedagogical interactivity (Batuchina & Melnikova, 2025). Furthermore, the phenomenon of technology anxiety still haunts some educators, creating a psychological reluctance to explore new digital platforms (Mulyoto et al., 2024). This condition indicates that the digitalization of education remains confined to the stage of structural formality and has not yet touched the essence of student-centered instructional innovation.

The phenomenon of the digital pedagogical divide is clearly visible in junior high school (SMP) education units in Sragen Regency. Based on data from the 2024 Sragen Regency Education Report, the aggregate achievement of the regional education Minimum Service Standards (SPM) has indeed reached the "Complete Primary" category with a score of 79.01. However, scores on the indicators for technology-based learning quality and teacher instructional creativity remain stuck in the "Medium" category. Furthermore, a strong disparity in technological competency is indicated between teachers in urban areas and those in rural areas (Çetinkaya & Sürücü, 2025). This problem is exacerbated by school management practices, which largely prioritize bureaucratic-administrative leadership patterns over transformational functions (Schmitz et al., 2023; Vermeulen et al., 2022). As a result, regional digitalization policies have not been internalized into organizational behaviors that could trigger breakthroughs in digital learning media for teachers.

Theoretically and empirically, educational management literature confirms that teachers' digital creativity does not develop in a vacuum, but rather is a synthesis of organizational environmental determinants and internal psychological factors of educators. The principal's transformational leadership acts as a visionary catalyst capable of inspiring, providing intellectual stimulation, and building a shared commitment to innovation (Alzouebi et al., 2025; A'mar & Eleyan, 2022; Zhou & Niu, 2025). Simultaneously, a school's culture of innovation provides a safe psychological space for teachers to collaborate, exchange good practices, and experiment with new methods without the intimidation of failure (Fuad et al., 2022; Gil et al., 2026). On the personal side, technological self-efficacy plays a fundamental function as a teacher's cognitive belief in their competence to integrate technology effectively (Afari et al., 2023; Ali Alshuhumi et al., 2025). The synergistic relationship between these factors forms an absolute foundation for the sustainability of innovative behavior in the school environment (Mollah et al., 2024).

Although the relationships between these variables have been extensively explored, a critical literature review reveals several substantive gaps (empirical, contextual, and methodological gaps) that require further investigation. Most previous research on digital leadership and creativity has focused on universities or education systems in developed countries with mature digital infrastructure (Batuchina & Melnikova, 2025; Long & Xia, 2025). Consequently, these models do not adequately reflect the unique characteristics of elementary and secondary schools in developing countries undergoing digital transitions, such as Indonesia. Furthermore, most previous studies have limited their analysis to direct influences or non-creative outcomes such as adoption intention or work commitment (Zhou & Niu, 2025; Masry & Da'as, 2021). Empirical investigations that address technology self-efficacy as a psychological mediating mechanism bridging transformational leadership and school innovation culture toward the digital creativity of junior high school teachers at the district level are still very limited.

To address this knowledge gap, this study was designed with a survey-based, causal-explanatory quantitative approach and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 software. PLS-SEM was chosen strictly because of its superiority in estimating measurement models (outer models) and structural models (inner models) simultaneously on complex latent variable networks (Hair et al., 2019; Hair & Alamer, 2022). This method has a very strong predictive orientation for dissecting direct and indirect influence paths through intermediary variables. Through this approach, the accuracy of estimating the mediating role of teachers' technology self-efficacy in reflecting the influence of organizational stimulants can be tested objectively and robustly (Sarstedt & Moisesescu, 2023; Wilson et al., 2024).

This research roadmap was formulated in a phased and integrated manner to address the challenges faced in the field. The initial phase was rooted in the identification of empirical phenomena such as fluctuations and stagnation in the digital creativity of junior high school teachers in Sragen Regency. The second phase explored two external organizational-level determinants strongly suspected to be the main drivers: the principal's transformational leadership and the school's culture of innovation. The third phase examined the internal cognitive construct of teacher technology self-efficacy as a psychological transmission mechanism that mediates the transfer of organizational stimuli into tangible behavioral outcomes. The final phase produced a comprehensive predictive structural model that not only provides scientific contributions but also formulates measurable policy recommendations for education stakeholders in Sragen Regency.

The novelty of this study lies in the formulation of an integrated structural model that synthesizes transformational leadership theory, organizational culture, and Social Cognitive Theory (Albert Bandura) into a single, coherent empirical framework for junior high schools in digital transition regions. Unlike previous studies that examined leadership or organizational climate factors separately, this study simultaneously integrates transformational leadership and innovation culture and validates the psychological transmission mechanism of technological self-efficacy in triggering specific dimensions of teachers' digital creativity (originality, flexibility, and fluency). This framework provides a new perspective on how external environmental factors translate into individual digital capabilities of teachers in autonomous regions.

The significance of this research encompasses both theoretical and practical dimensions. Theoretically, this research enriches the discourse of educational management by validating the predictive power of Social Cognitive Theory (Bandura, 2011) in explaining teachers' digital creative behavior under the influence of transformational leadership and a culture of innovation. Practically, these empirical findings provide precise guidance for the Sragen Regency Education Office in designing teacher training interventions based on strengthening self-efficacy, guiding the Principals' Working Meeting (MKKS) in transforming the digital instructional leadership model, and assisting the Subject Teachers' Meeting (MGMP) in reducing technology anxiety to realize competitive interactive learning.

Based on the background, conceptual framework, and research gaps outlined, this study aims to examine and analyze: (1) the direct influence of transformational leadership on the digital creativity of junior high school teachers in Sragen Regency; (2) the direct influence of school innovation culture on the digital creativity of junior high school teachers in Sragen Regency; (3) the mediating influence of teachers' technological self-efficacy on the relationship between transformational leadership and teachers' digital creativity; and (4) the mediating influence of teachers' technological self-efficacy on the relationship between school innovation culture and teachers' digital creativity. In line with these objectives, four research hypotheses are proposed: H1 predicts that transformational leadership has a positive and significant influence on teachers' digital creativity; H2 predicts that school innovation culture has a positive and significant influence on teachers' digital creativity; H3 predicts that teachers' technological self-efficacy significantly mediates the influence of transformational leadership on teachers' digital creativity; and H4 predicts that teachers' technological self-efficacy significantly mediates the influence of school innovation culture on junior high school teachers' digital creativity in Sragen Regency.

II. METHODS

Research Plan and Design

This study adopted a quantitative approach with a cross-sectional explanatory survey design. The quantitative approach was chosen because the study aimed to test associative and causal hypotheses between latent variables through objective and measurable numerical data (Creswell & Creswell, 2023; Hair et al., 2019). The cross-sectional design allows for comprehensive data collection of teacher perceptions at a specific point in time to record the structural relationship between Transformational Leadership (X1) and School Innovation Culture (X2) on Teacher Digital Creativity (Y) with the mediation of Teacher Technology Self-Efficacy (Z) (Hair & Alamer, 2022; Wilson et al., 2024).

Population, Sample, and Sampling Techniques

The target population in this study includes all public and private junior high school (SMP) teachers in Sragen Regency spread across 93 educational units. However, to ensure the accessibility and accuracy of the online survey administration, the researcher determined an accessible population of 249 teachers. This accessible population consists of 166 administrators of the Subject Teachers' Conference (MGMP) of Sragen Regency from 15 subjects, 45 teachers from SMP Negeri 1 Karangmalang, and 38 teachers from SMP Negeri 4 Sragen. The involvement of teachers from SMPN 1 Karangmalang and SMPN 4 Sragen was based on purposive considerations where both educational units are led by the same principal, providing real-world observation dynamics of transformational leadership practices in a dual managerial context.

The sampling technique used was saturated sampling or census of the accessible population, where all 249 members of the accessible population were given a full questionnaire instrument (Cohen et al., 2018; Sulawartisari & Kardiyem, 2023). Of the total instruments distributed, all 249 respondents successfully filled in the data completely and validly (response rate 100%), which in aggregate represents teachers from 79 junior high schools in Sragen Regency. This sample size of $N = 249$ has met the sample adequacy requirements for PLS-SEM estimation based on the 10-times rule criteria and statistical power calculations

Operational Definition of Variables and Instrument Development

Data were collected using a five-point Likert-scale closed questionnaire, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The instrument was developed based on a synthesis of standard theoretical indicators: (1) Teacher Digital Creativity (Y) adapted from Batuchina & Melnikova (2025), Cojocariu & Boghian (2024), and Bindel Sibassaha et al. (2025) which includes 3 dimensions (Originality, Flexibility, Fluency) with 6 statement items (TDC1–TDC6); (2) Teacher Technology Self-Efficacy (Z) adapted from Bandura (2011), Afari et al. (2023), Mulyoto et al. (2024), and Long & Xia (2025) which includes 4 dimensions (ICT Technical Confidence, ICT Pedagogical Integration, Technological Resilience, Problem-Solving Ability) with 8 statement items (TS1–TS8); (3) Transformational Leadership (X1) adapted from Bass & Riggio (2021), Schmitz et al. (2023), and Zhou & Niu (2025) which includes 4 dimensions (Exemplary/Idealized Influence, Inspirational Motivation, Intellectual Stimulation, Individual Attention) with 8 statement items (TL1–TL8); and (4) School Innovation Culture (X2) adapted from Fuad et al. (2022), Alzouebi et al. (2025), Gil et al. (2026), and Masry & Da'as (2021) which includes 4 dimensions (Organizational Support, Teacher Collaboration, Openness to Change, Organizational Commitment) with 8 statement items (SIC1–SIC8). A pilot test of the instrument was conducted on 30 junior high school teachers outside the research sample to ensure the instrument's readability.

Table 1. Operational Construction of Variables and Research Instrument Grid

Let Variable	Operational Dimensions / Indicators	Code Item	Theoretical References
Transformational Leadership (X1)	1) Role Model, 2) Inspirational Motivation, 3) Intellectual Stimulation, 4) Individual Attention	TL1 - TL8 (8 item)	Bass & Riggio (2021); Zhou & Niu (2025)
School Innovation Culture (X2)	1) Organizational Support, 2) Teacher Collaboration, 3) Cultural Openness, 4) Organizational Commitment	SIC1 - SIC8 (8 item)	Fuad et al. (2022); Gil et al. (2026)
Teacher Technology Self-Efficacy (Z)	1) ICT Technical Confidence, 2) Pedagogical Integration, 3) Technological Resilience, 4) Problem Solving	TS1 - TS8 (8 item)	Afari et al. (2023); Long & Xia (2025)
Teacher Digital Creativity (Y)	1) Originality of Digital Solutions, 2) Platform Flexibility, 3) Smoothness of Media Creation	TDC1 - TDC6 (6 item)	Batuchina & Melnikova (2025); Cojocariu & Boghian (2024)

Data Collection Procedures and Bias Control

Primary data collection was conducted over six months (June–November 2026) through a Google Forms-based digital questionnaire coordinated in a structured manner with the MKKS Management and MGMP Management of Sragen Regency (Wu et al., 2022). To mitigate self-report bias and social desirability bias, the questionnaire introduction guaranteed full anonymity of respondents and emphasized that responses would not impact teacher performance assessments. Furthermore, all questions were set as required fields to eliminate the risk of missing data, and item order was randomized to minimize common

method bias, which was further confirmed through Harman's single-factor test (Geier et al., 2021; Hakimi et al., 2021).

Data Analysis Techniques

Data analysis was carried out using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method with SmartPLS 4 software. The testing stages refer to the standard guidelines of Hair & Alamer (2022) and Sarstedt & Moisesescu (2023), which consist of two main evaluations: (1) Evaluation of the measurement model (outer model) to assess convergent validity (outer loading > 0.70 and Average Variance Extracted / AVE > 0.50), discriminant validity (Fornell-Larcker criteria where the square root value of AVE is higher than the inter-construct correlation), and construct reliability (Cronbach's Alpha > 0.70 and Composite Reliability > 0.70); and (2) Evaluation of the structural model (inner model) to estimate the coefficient of determination (R^2), effect size (f^2), global model suitability (Goodness of Fit / GoF Tenenhaus), as well as the significance of the direct path coefficient and indirect influence through a non-parametric bootstrapping procedure of 5,000 subsamples with a t-statistic threshold of > 1.96 at $p < 0.05$.

III. RESULT AND DISCUSSION

Evaluation of the Measurement Model (Outer Model)

Measurement model evaluation was conducted to ensure that all empirical indicators were able to reflect their latent constructs validly and consistently. Based on the results of PLS-SEM algorithm data processing in SmartPLS 4, all question items in the four variables met the criteria for convergent validity, discriminant validity, and construct reliability.

Table 2. Results of Convergent Validity and Construct Reliability Tests

Let Variable	Outer Loading Range	AVE	Cronbach's Alpha	Composite Reliability (rho_c)	Evaluation
School Innovation Culture (SIC)	0,853 – 0,941	0,797	0,963	0,969	Very Valid & Reliable
Teacher Digital Creativity (TDC)	0,848 – 0,894	0,750	0,933	0,947	Very Valid & Reliable
Teacher Technology Self-Efficacy (TS)	0,748 – 0,872	0,670	0,929	0,942	Very Valid & Reliable
Transformational Leadership (TL)	0,859 – 0,932	0,813	0,967	0,972	Very Valid & Reliable

As presented in Table 2, the outer loading values of all indicators are well above the threshold of 0.70. The details of specific factor loadings show very strong indicator contributions: SIC1 (0.860), SIC2 (0.893), SIC3 (0.853), SIC4 (0.899), SIC5 (0.941), SIC6 (0.879), SIC7 (0.901), and SIC8 (0.911); TDC1 (0.848), TDC2 (0.861), TDC3 (0.851), TDC4 (0.894), TDC5 (0.889), and TDC6 (0.851); TL1 (0.859), TL2 (0.908), TL3 (0.932), TL4 (0.903), TL5 (0.909), TL6 (0.890), TL7 (0.899), and TL8 (0.913); and TS1 (0.818), TS2 (0.748), TS3 (0.784), TS4 (0.872), TS5 (0.843), TS6 (0.869), TS7 (0.812), and TS8 (0.793). The AVE value of each construct also exceeded the minimum criterion of 0.50, with the highest values achieved by Transformational Leadership (0.813) and School Innovation Culture (0.797). The reliability test recorded very high Cronbach's Alpha (> 0.92) and Composite Reliability (> 0.94) values, confirming the internal consistency of the instrument.

Table 3. Results of the Discriminant Validity Test (Fornell-Larcker Criteria)

Construction Let	Culture of Innovation (CIC)	Digital Creativity (TDC)	Technology Self-Efficacy (TS)	Transformational Leadership (TL)
School Innovation Culture (SIC)	0,893			
Teacher Digital Creativity (TDC)	0,746	0,866		
Teacher Technology Self-Efficacy (TS)	0,702	0,814	0,818	
Transformational Leadership (TL)	0,825	0,680	0,661	0,902

Based on the Fornell-Larcker criteria in Table 3, the square root of the AVE in the diagonal position (in bold) is consistently higher than the correlation of that construct with other constructs in the model. As an illustration, the square root of the AVE of School Innovation Culture (0.893) is greater than its correlation

with TDC (0.746), TS (0.702), and TL (0.825). The same condition is evident for all other constructs, thus confirming that each construct has very adequate discriminant validity.

Structural Model Evaluation (Inner Model) and PLS-SEM Diagram Testing

The evaluation of the structural model aims to determine the predictive capacity of the model and the strength of the relationship between latent variables. This figure visualizes all path coefficients (β), T-statistic value, coefficient of determination value (R^2), and effect size (f^2).

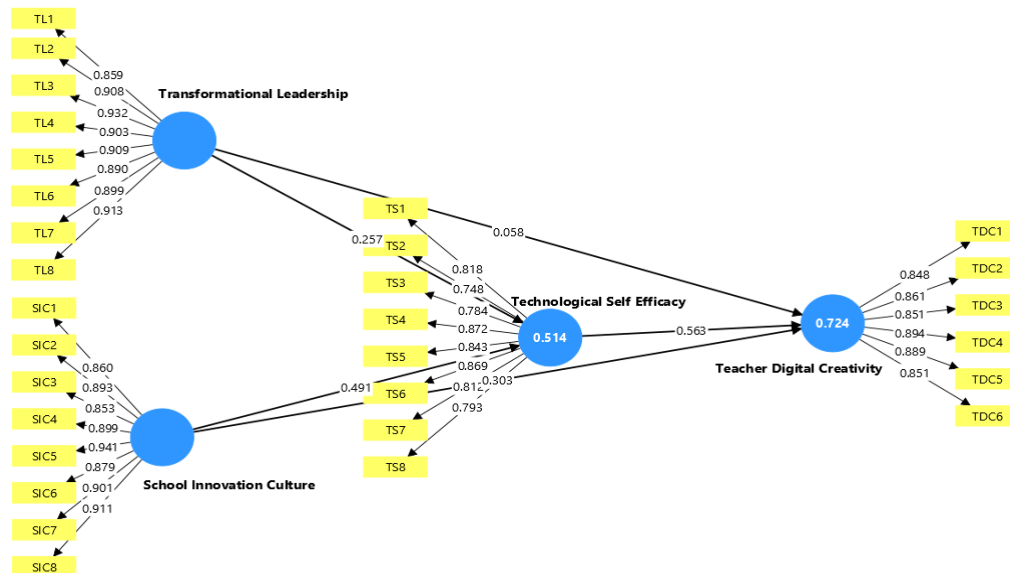


Fig. 3.1 PLS-SEM Structural Model Diagram of the Influence of Transformational Leadership and School Innovation Culture on Teachers' Digital Creativity Through the Mediation of Technology Self-Efficacy

Based on Figure 3.1 above, the results of the structural model analysis using SmartPLS 4 provide a very clear and comprehensive empirical picture of the relationship patterns between constructs:

1. Model Predictive Power (R^2):

Teacher Digital Creativity (TDC): Obtained value $R^2 = 0,724$ (Strong Category). This indicates that 72.4% of the variance of the Digital Creativity of Junior High School Teachers in Sragen Regency is jointly predicted by Transformational Leadership, School Innovation Culture, and Self-Efficacy Teacher Technology. The remaining 28.0% is influenced by other factors outside this research model.

Teacher Technology Self-Efficacy (TS): Obtained value $R^2 = 0,514$ (Moderate-Strong Category). This means that 51.4% of the variance in teachers' self-confidence in mastering technology is explained by the Transformational Leadership and School Innovation Culture factors.

2. Role Dominance Self-Efficacy Teacher Technology (f^2):

The direct relationship from Teacher Technology Self-Efficacy (TS) to Teacher Digital Creativity (TDC) yielded the strongest path coefficient value ($\beta = 0.565$; $T = 7.966$; $p = 0.000$).

Mark effect size (f^2) for TS line $\rightarrow$ TDC of 0,557 (Very Large/Dominant Effect Category, far exceeding the threshold) $f^2 > 0,35$). This proves empirically that self-efficacy teacher technology is a key variable (core determinant) is the most critical factor that determines the level of digital creativity of teachers in the field.

3. Comparison of Direct Influence of Exogenous Variables:

School Innovation Culture (SIC) has a stronger direct influence on Teachers' Digital Creativity ($\beta = 0,274$; $T = 3,657$; $p = 0,000$) compared to the direct influence of Transformational Leadership (TL) ($\beta = 0,149$; $T = 2,485$; $p = 0,013$).

Likewise with the formation of Self-Efficacy Teacher Technology, School Innovation Culture shows a dominant influence ($\beta = 0,493$; $T = 5,191$; $p = 0,000$) compared to Transformational Leadership ($\beta = 0,172$; $T = 2,630$; $p = 0,009$).

4. Goodness of Fit (GoF):

The GoF Tenenhaus value obtained was 0.692

$(\sqrt{Rerata AVE \times Rerata R^2} = \sqrt{0,758 \times 0,615} = 0,692)$, is above the threshold of 0.36 (category large GoF). This value confirms that the constructed structural model has a very high level of reliability and econometric suitability. The evaluation was carried out by examining the R-Square (R^2) value, the f-Square (f^2) effect size, and Goodness of Fit (GoF).

Table 4. Coefficient of Determination (R^2) and Size of Influence (f^2)

Structural Construct / Path	Parameter	Mark	Power Category
Teacher Digital Creativity (TDC)	R^2 (R^2 Adj)	0,724	Strong (Explains 72.4% of variance)
Teacher Technology Self-Efficacy (TS)	R^2 (R^2 Adj)	0,514	Moderate (Explains 51.4% of variance)
Technology Self-Efficacy -> Digital Creativity	f-Square	0,557	Big / Very Dominant
School Innovation Culture -> Technology Self-Efficacy	f-Square	0,159	Moderate
School Innovation Culture -> Digital Creativity	f-Square	0,092	Small / Moderate

The data in Table 4 shows that the adjusted R-Square value for the Teacher Digital Creativity variable is 0.724, indicating that 72.4% of the variance in junior high school teachers' digital creativity in Sragen Regency can be explained simultaneously by Transformational Leadership, School Innovation Culture, and Teacher Technology Self-Efficacy, while the remaining (28.0%) is influenced by other factors outside the model. As for the Teacher Technology Self-Efficacy variable, the adjusted R-Square value of 0.514 proves that 51.4% of the variance in teacher self-efficacy can be predicted by the principal's leadership and organizational innovation culture. The effect size f^2 evaluation confirmed a crucial finding: the path of Technology Self-Efficacy towards Teacher Digital Creativity recorded the highest and most dominant f^2 value, which was 0.557 (the large effect category exceeds the 0.35 limit). In addition, the evaluation of the global model fit was calculated through Tenenhaus' Goodness of Fit (GoF): $GoF = \sqrt{(R^2_{average} \times AVE_{average})} = \sqrt{(0.619 \times 0.7735)} = \sqrt{0.4788} = 0.692$. This GoF value of 0.692 falls into the very large category ($GoF > 0.36$), proving the validity of the integrated structural model.

Research Hypothesis Testing

The research hypothesis was tested using a non-parametric bootstrapping procedure with 5,000 subsamples at a 95% confidence level ($\alpha = 0.05$). The hypothesis was accepted if the t-statistic value exceeded 1.96 and the p-value was less than 0.05.

Table 5. Results of Hypothesis Testing of Direct Effect and Mediating Effect

Hypothesis	Relationship Paths Between Variables	Coefficients (β)	Std. Dev	T-Statistic	P-Value	Results
H1	Transformational Leadership -> Teacher Digital Creativity	0,149	0,058	2,485	0,013	Accepted
H2	School Innovation Culture -> Teacher Digital Creativity	0,274	0,083	3,657	0,000	Accepted
H3	TL -> TS -> Teacher Digital Creativity (Mediation)	0,149	0,058	2,485	0,013	Accepted
H4	SIC -> TS -> Teacher Digital Creativity (Mediation)	0,274	0,068	4,039	0,000	Accepted

Based on the summary of the hypothesis testing results in Table 5, all research hypotheses (H1, H2, H3, and H4) were declared significantly accepted at the 5% alpha significance level ($p < 0.05$). Transformational leadership and school innovation culture were proven to have a positive direct influence and an indirect influence mediated by teachers' technology self-efficacy on digital creativity.

Discussion of Empirical Findings

The Influence of Transformational Leadership on Self-Efficacy and Digital Creativity. Transformational leadership was shown to have a positive and significant effect on technological self-efficacy ($t = 2.630$; $p = 0.009$) and digital creativity of junior high school teachers in Sragen Regency ($t = 2.485$; $p = 0.013$), supporting H1. This finding confirms that a principal who demonstrates digital role models (idealized influence) and inspirational motivation can foster teachers' confidence in exploring instructional technology tools. Through intellectual stimulation and individual attention, the principal encourages teachers to step out of their administrative comfort zones and boldly experiment with new teaching methods. This finding aligns with research by Bass & Riggio (2021) and Zhou & Niu (2025) which found that transformational leadership triggers massive digital intention and adoption, and reinforces the conclusion of Schmitz et al. (2023) that supportive leadership reduces technological anxiety and empowers teachers to integrate ICT in challenging ways.

The Superior Role of School Innovation Culture in Encouraging Creative Behavior. School innovation culture recorded a very strong positive and significant influence on both technology self-efficacy ($t = 5.191$; $p = 0.000$) and teacher digital creativity ($t = 3.657$; $p = 0.000$), supporting H2. Interestingly, the coefficient of innovation culture's influence far exceeded that of transformational leadership. This proves that a work environment that prioritizes collaboration, tolerance for experimental failure, and organizational commitment provides a conducive psychological ecosystem for teachers. When the school climate is open and supportive, teachers are more free to share digital media best practices and learn from each other among colleagues. These results align with the findings of Fuad et al. (2022) and Gil et al. (2026) that a collaborative climate and open culture significantly accelerate the increase in educational innovation capacity, and strengthen the research of Alzouebi et al. (2025) regarding the importance of involving the school ecosystem in fostering learning innovation.

Transmission Mechanism of Teacher Technology Self-Efficacy Mediation. The indirect path test confirmed the significant mediation role of teachers' technological self-efficacy on the influence of transformational leadership ($t = 2.485$; $p = 0.013$) and school innovation culture ($t = 4.039$; $p = 0.000$) on teachers' digital creativity, thus H3 and H4 were accepted. The nature of the mediation formed was complementary partial mediation. Because the direct path to digital creativity remained significant, leadership and innovation culture interventions can directly increase digital creativity, but the effect is accelerated manifold when transmitted through strengthening teachers' technological self-efficacy. Empirical analysis showed that the direct path of technological self-efficacy to teachers' digital creativity had the highest t-statistic value ($t = 7.966$; $p = 0.000$) with a large effect size ($f^2 = 0.557$). This finding provides strong empirical confirmation of Social Cognitive Theory (Bandura, 2011), that external environmental factors (leadership and school culture) will not be optimally transformed into creative actions without internal cognitive beliefs (self-efficacy) that teachers are able to master and integrate the technology in the classroom (Afari et al., 2023; Batuchina & Melnikova, 2025; Long & Xia, 2025; Mulyoto et al., 2024).

Key Findings of the Research. Based on the integration of the empirical findings above, four key research findings were formulated:

1. Teachers' technological self-efficacy is the most dominant predictive determinant ($f^2 = 0.557$, $t = 7.966$) in encouraging the originality, flexibility, and fluency of digital creativity of junior high school teachers in Sragen Regency.
2. The school's culture of innovation provides a greater empirical impetus for teachers' beliefs and creativity than the influence of the principal's transformational leadership style.
3. Teachers' technological self-efficacy functions as a complementary partial mediation, meaning that leadership and school culture stimuli will produce much more massive digital creativity output if focused on building teacher self-confidence.
4. The structural model has very high predictive accuracy (adjusted $R^2 = 0.724$ and $GoF = 0.692$), proving that the combination of the three variables is able to predict 72.4% of the variability of teachers' digital creativity.

IV. CONCLUSION

Research Conclusion.

Based on the PLS-SEM statistical analysis and discussion of the research results, the following empirical conclusions were drawn: (1) Transformational leadership has a positive and significant effect on the technological self-efficacy of junior high school teachers in Sragen Regency; (2) School innovation culture has a positive and significant effect on the technological self-efficacy of junior high school teachers in Sragen Regency; (3) Transformational leadership has a positive and significant effect on the digital creativity of junior high school teachers in Sragen Regency; (4) School innovation culture has a positive and significant effect on the digital creativity of junior high school teachers in Sragen Regency; (5) Teachers' technological self-efficacy has a positive and significant effect on the digital creativity of junior high school teachers in Sragen Regency; (6) Teachers' technological self-efficacy significantly mediates the effect of transformational leadership on teachers' digital creativity; and (7) Teachers' technological self-efficacy significantly mediates the effect of school innovation culture on the digital creativity of junior high school teachers in Sragen Regency.

Theoretical Implications.

Theoretically, this research demonstrates the harmonious integration of transformational leadership theory and Albert Bandura's Social Cognitive Theory in explaining the dynamics of educator behavior in the digital era. This research emphasizes that technological self-efficacy acts as a vital cognitive bridge that mediates leadership stimuli and school culture into creative action. These findings expand the scope of educational management in developing regions undergoing the digital transition.

Practical Implications.

In practical terms, the research results provide strategic directions: (1) For the Sragen Regency Education Office, the education digitalization policy must shift from solely procuring physical facilities to a hands-on mentoring program to build teacher self-efficacy and reduce the urban-suburban digital disparity; (2) For School Principals, transformational leadership must be realized in the form of providing safe experimental spaces, appreciation for teacher creativity, and role models for the use of ICT; and (3) For Teachers, increasing independent competencies through the MGMP community must be utilized to train digital resilience and create contextual interactive learning media.

Limitations and Suggestions for Further Research.

This study has limitations that need to be anticipated in future studies: the geographical scope is limited to junior high school teachers in Sragen Regency, the research design is cross-sectional so it does not record the dynamics of behavioral changes temporally, and it does not measure the physical factors of the availability of technological infrastructure objectively. For further research, it is recommended: (1) to expand the sample coverage across educational levels (elementary, senior high/vocational high school) and across districts; (2) to apply a longitudinal approach or mixed methods study to explore the depth of the meaning of digital creativity; and (3) to integrate moderating variables such as teacher digital literacy, workload, or the availability of school ICT infrastructure.

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