

The Influence of Digital Literacy, Self-Efficacy, and Teaching Commitment on Instructional Innovation of Junior High School Teachers

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Abstract

This study aims to analyze the influence of digital literacy, self-efficacy, and teaching commitment on instructional innovation among junior high school teachers in Anggeraja District. The research employed a quantitative approach. The population and sample consisted of all teachers from SMPN 1 and SMPN 3 Anggeraja, totaling 73 respondents. Data were collected through the distribution of 73 questionnaires. To test the research hypothesis, Partial Least Squares-Structural Equation Modeling (PLS-SEM) was used with the SmartPLS version 4.1.0.9 application. The results showed that digital literacy had a positive and significant effect on teachers' teaching commitment (coefficient = 0.513; $p = 0.000$). Teachers with high digital literacy tend to demonstrate stronger dedication, responsibility, and consistency in their professional duties. Furthermore, digital literacy significantly influenced instructional innovation (coefficient = 0.622; $p = 0.000$), where digitally competent teachers were more capable of creating creative and adaptive teaching methods. Meanwhile, self-efficacy also had a positive and significant effect on teaching commitment (coefficient = 0.284; $p = 0.010$), indicating that confident teachers are more consistent and enthusiastic in fulfilling their professional roles. However, self-efficacy did not significantly affect innovation (coefficient = 0.067; $p = 0.459$), suggesting that confidence alone is insufficient to drive innovation without external support and strong commitment. Indirectly, digital literacy also influences instructional innovation

through teaching commitment as a mediator. This implies that teaching commitment strengthens the transformation of digital capabilities into innovative teaching practices. On the other hand, self-efficacy did not significantly affect innovation through commitment ($p = 0.075$), indicating the need for additional factors such as creativity and collaborative culture for self-confidence to effectively foster innovation.

Keywords: *Digital Literacy, Self-Efficacy, Teaching Commitment, Instructional Innovation, Junior High School Teachers*

INTRODUCTION

Technology in education enhances and advances teaching, learning, and instruction in modern life. Students' attitudes toward learning have been observed to improve with the use of information and communication technology (Wismawan et al., 2019). Education is the primary foundation of national development, and in today's technological era, teachers act as facilitators capable of addressing various challenges and changes. The use of technology has improved the quality of learning and students' attitudes toward learning (Lazar et al., 2020). The quality of education in Indonesia is highly dependent on components of the education system, such as the quality of teachers, programs, and facilities. Improving teacher quality is crucial to supporting sustainable educational development because teacher quality is a vital part of the teaching and learning process, which is the goal of any educational organization (Sulastri et al., 2020).

One of the causes of the low quality of education in Indonesia is the inability of teachers to demonstrate innovative work behavior, which has an impact on the low performance of schools in achieving learning objectives through various methods and means (Hermaini & Nurdin, 2020). Without innovation, organizations struggle to grow and fail to achieve their goals. Learning innovation is conscious discovery that creates something new to support the achievement of learning goals, particularly in the development of science and technology, including digital literacy, which requires inspiring teachers to possess basic digital skills.

Improving the quality and professionalism of teachers is done through workshops, seminars, training, and certification (Latiana, 2019). Professional teachers are a key prerequisite for quality education. The commitment of certified teachers reflects responsibility, self-efficacy, and the utilization of innovation and technology in digital literacy. This commitment includes an understanding of professional duties and responsibilities. However, many

teachers in the field still teach beyond their competencies, and learning is not designed systematically, comprehensively, and collaboratively with students.

Lack of understanding by teachers has an impact on hindering promotions due to the minimal research components carried out (Kristiawan et al., 2021). Digital literacy enables the transformation of activities through the use of technology. Teachers need to have digital awareness in their lives, work, and learning. According to Meyers et al., (2013), Digital literacy competencies encompass critical thinking skills, which are crucial given the abundance of information available online and the ease of content creation. This literacy also supports the development of teachers' thinking skills in carrying out their duties.

In digital literacy, teachers must be able to use, analyze, create, and reflect on various digital devices as a form of expression and communication (Sholichah & Pahlevi, 2021). Digital literacy encompasses individual competencies in accessing, applying, assessing, analyzing, and processing digital data to create new knowledge (Liu et al., 2020). This understanding also includes the safe use of digital tools to obtain information from the internet (Biezā, 2020). Teachers need to understand digital literacy because they are required to create, collaborate, and share content responsibly (Zainuddin et al., 2020). Teachers with low digital skills are at risk of spreading unreliable information. Therefore, the ability to find and interpret credible sources of information is crucial amidst the rapid growth of technology.

Teachers' innovative behavior is very important in achieving educational goals, especially through collaboration with schools, colleges, and industry (Khairunnisa & Ashila, 2024). Teachers are required to actively seek out and create new, interesting learning methods and improve existing deficiencies (Isnain & Nurwidawati, 2018). Data analysis, such as through learning analytics, helps teachers understand student learning behavior and make informed teaching decisions (Yin et al., 2019). Self-efficacy, the belief in one's own abilities, significantly influences innovative behavior. Teachers with high self-efficacy are more open to new approaches, motivate students to think critically, and create creative learning environments. They are also more resilient to challenges and motivated in their work (Firdausiah & Etikariena, 2021). Innovative behavior encourages positive changes from traditional to modern and improves the quality of learning (Ramdayana & Prasetyono, 2022). Strong self-efficacy strengthens innovation and achievement of results (Wijaya et al., 2023), while teachers with low efficacy tend to be negative, less enthusiastic, and easily angered (Kusumawati, 2020).

Self-efficacy refers to an individual's belief, particularly that of teachers, in their own ability to plan, implement, and manage the teaching and learning process effectively to achieve desired outcomes. For teachers, self-efficacy serves as a determining factor in the implementation of instructional innovation, as those with a high level of self-efficacy are more likely to experiment with new strategies, integrate digital technologies, and maintain their teaching

commitment despite challenges. In the era of digital-based educational transformation, self-efficacy not only reflects confidence in pedagogical competence but also the ability to adapt to digital literacy that supports instructional innovation.

Teachers with high levels of self-efficacy tend to be more open to using innovative learning methods, trying new approaches to teaching, and striving to improve the quality of education. They are also more likely to create a classroom environment that supports student creativity, motivates active participation, and inspires students to think critically and develop new ideas. High levels of innovative behavior enable teachers to develop more effective and engaging learning methods, stimulate student creativity, and provide opportunities for students to think critically, explore new ideas, and develop problem-solving skills. Individuals with high levels of innovative behavior will believe and trust in themselves to organize all their motivation and abilities when carrying out a series of tasks or when facing certain obstacles or problems to achieve their desired goals, thereby improving performance within the organization (Firdausiah & Etikariena, 2021).

Teacher commitment reflects sincerity in teaching, developing a career, and carrying out duties professionally. (Hassan et al., 2024). Committed teachers tend to teach effectively and build synergy with students so that learning is easy to understand (Arifin, 2020). In the digital era, teachers are required to master technology and apply it innovatively in learning. However, many teachers still lack technological skills and are unable to optimally integrate digital tools. This challenge requires ongoing training and professional development. Furthermore, the gap in technology access among students must be addressed to ensure inclusive learning. Teachers must also ensure that technology is used in a relevant manner and does not diminish social interaction. In its use, teachers need to teach digital ethics, maintain security, and protect student privacy.

Learning innovation requires mastery of technological skills, collaboration, creativity, an understanding of student characteristics, and the ability to manage adaptive and personalized learning. However, observations at junior high schools in Anggeraja District indicate that teachers' ability to develop learning innovations remains low due to limited digital literacy, low self-efficacy, and a lack of commitment to the profession. Other obstacles, such as minimal institutional support, resistance to change, and limited time and resources, also exacerbate the situation. Although technological facilities in schools are considered adequate, teachers' ability to utilize them innovatively remains limited. Yet, professional teachers with high commitment and self-efficacy are key to creating quality education. In line with the view Cahyaningrum et al., (2023) that teacher career commitment is influenced by self-efficacy, so this study aims to analyze the influence of digital literacy, self-

efficacy, and teaching commitment on teacher learning innovation at Junior High Schools in Anggeraja District.

METHOD

The research method in this document uses a quantitative approach with an associative research type to test the relationship between digital literacy variables (X_1), self-efficacy (X_2), teacher commitment (Z), and learning innovation (Y). The study was conducted on Junior High School (SMP) teachers in Anggeraja District, Enrekang Regency, during April–May 2025. The study population consisted of 92 teachers, and because the number was less than 100, a saturated sampling technique was used, namely the entire population was sampled. Data collection was carried out through a closed questionnaire with a five-point Likert scale and documentation to complete contextual data. The research instrument was tested using a validity test (product-moment correlation) and a reliability test (Spearman Brown formula), assisted by SPSS software version 26. In this study, SPSS was employed to perform descriptive statistical analysis, as well as validity, reliability, and preliminary correlation tests among variables, while SmartPLS was utilized to analyze causal relationships between latent variables through Structural Equation Modeling (SEM-PLS) in order to examine both direct and indirect effects among the research constructs.

The collected data were analyzed descriptively and inferentially. Descriptive analysis was used to describe the characteristics of respondents and each research variable based on the average score. Meanwhile, inferential analysis was conducted using Partial Least Squares-Structural Equation Modeling (PLS-SEM) through the SmartPLS 3.2.9 application to test the hypothesis. The analysis stages included testing the outer model (convergent validity, discriminant validity, and composite reliability) and the inner model (goodness of fit, R-square, predictive relevance, and influence between variables). Hypothesis testing was conducted using the bootstrapping technique, where the relationship between variables is declared significant if the t-statistic value ≥ 1.65 at a significance level of 0.05.

RESULTS AND DISCUSSIONS

1. Descriptive Analysis of Research Variables

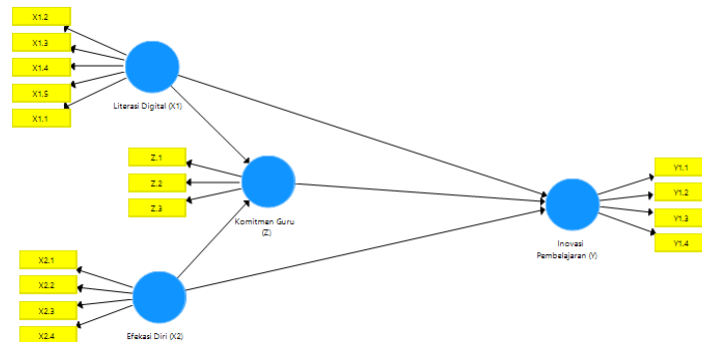
This study analyzed four main variables: Digital Literacy (X_1), Self-Efficacy (X_2), Teacher Commitment (Z), and Learning Innovation (Y). The results of the descriptive analysis showed that all variables were in the high category. Digital Literacy (X_1) obtained an average score of 4.255, reflecting teachers' ability to use digital technology effectively in learning. Self-Efficacy (X_2) had an average of 4.009, indicating teachers' confidence in their professional abilities. Teacher Commitment (Z) had an average score of 4.119, indicating high loyalty and responsibility towards the profession. Meanwhile, Learning Innovation (Y)

obtained an average score of 4.180, indicating that teachers have a strong tendency to innovate in the teaching and learning process.

2. Partial Least Squares Analysis (PLS-SEM)

PLS-SEM analysis was conducted to test the validity, reliability, and relationships between variables in the structural model.

Figure 1. PLS-SEM Model Specifications



a. Measurement Model (Outer Model)

Convergent Validity Test

Convergent validity testing is conducted by assessing the loading factor of each indicator against its construct. An indicator is considered valid if its loading factor is greater than 0.70, indicating that the construct can explain more than 50% of the indicator's variance.

Figure 2. PLS-SEM Algorithm Estimation Results

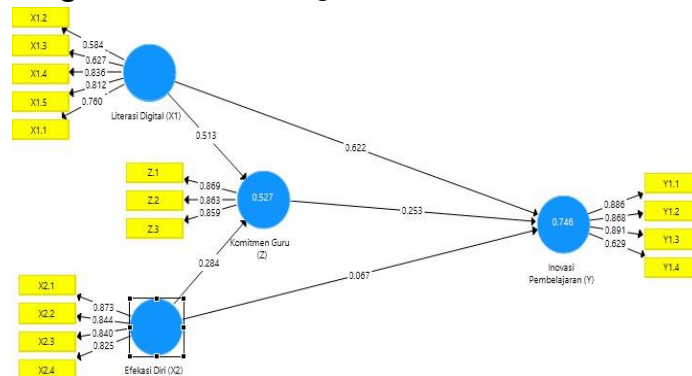


Table 1. PLS-SEM Outer Loadings Values

	Digital Literacy (X1)	Self Efficacy (X2)	Teacher Commitment (Z)	Innovation Learner (Y)
X1.1	0.584			
X1.2	0.627			
X1.3	0.836			
X1.4	0.812			
X1.5	0.760			
X2.1		0.873		
X2.2		0.844		
X2.3		0.840		

X2.4	0.825		
Z.1		0.869	
Z.2		0.863	
Z.3		0.859	
Y.1			0.886
Y.2			0.868
Y.3			0.891
Y.4			0.629

Table 1 shows the outer loading value of each indicator on its construct based on the initial PLS-SEM estimate, which describes the indicator's contribution in representing the latent construct. In the Digital Literacy construct (X1) with five indicators, the outer loading value ranges from 0.584–0.836; two indicators (X1.1 and X1.2) below 0.70 are still retained because they are in the range of 0.40–0.70, and the AVE value still meets convergent validity (≥ 0.50). The Self-Efficacy construct (X2) has four indicators with a value of ≥ 0.825 , indicating strong representation, while Teacher Commitment (Z) shows high internal consistency with a value of ≥ 0.859 . Meanwhile, Learning Innovation (Y) has three indicators above 0.86 and one indicator (Y.4) with a value of 0.629, which can still be retained if the AVE is ≥ 0.50 and is substantially relevant. Thus, all constructs meet convergent validity and are worthy of proceeding to the AVE test stage.

Table 2. Average Variance Extracted (AVE) Value

Average Variance Extracted (AVE)	
Digital Literacy (X1)	0.534
Self-Efficacy (X2)	0.715
Teacher Commitment (Z)	0.746
Learning Innovation (Y)	0.682

Source: Data Processing Results (2025)

Based on Table 2, the Average Variance Extracted (AVE) value for each variable shows results above the minimum threshold of 0.50, indicating good convergence between the construct and its indicators. This means that the latent variables are able to explain more than 50% of the variance in their indicators, thus all constructs meet the criteria for convergent validity.

Table 3. Convergent Validity Test Results

Variables	Indicator	Loading Factor	Cut Value	AVE	Convergent Validity
Digital Literacy (X1)	X1.1	0.760	0.70	0.534	Valid
	X1.2	0.584	0.70		
	X1.3	0.627	0.70		
	X1.4	0.836	0.70		
	X1.5	0.812	0.70		
Social Media (X2)	X2.1	0.873	0.70	0.715	Valid
	X2.2	0.844	0.70		
	X2.3	0.840	0.70		
	X2.4	0.825	0.70		

Commitment Teacher (Z)	Z.1	0.577	0.70	0.746	Valid
	Z.2	0.592	0.70		
	Z.3	0.550	0.70		
Learning Innovation (Y)	Y.1	0.629	0.70	0.682	Valid
	Y.2	0.599	0.70		
	Y.3	0.575	0.70		
	Y.4	0.688	0.70		

Source: Data Processing Results (2025)

Based on the results of the initial measurement model analysis using PLS-SEM, the outer loading and AVE values obtained indicate that all constructs have met convergent validity, with the criteria of loading factors > 0.70 and AVE > 0.50 (Hair et al., 2021). Although some indicators, such as X1.2 (0.584), X1.3 (0.627), Z.1 (0.577), Z.2 (0.592), Z.3 (0.550), Y.1 (0.629), Y.2 (0.599), and Y.3 (0.575), are below 0.70, all are maintained because the AVE value of each construct exceeds 0.50, namely Digital Literacy (0.534), Self-Efficacy (0.715), Teacher Commitment (0.746), and Learning Innovation (0.682). Thus, the indicators in each construct can represent the latent variables adequately.

Discriminant Validity Test

A discriminant validity test is conducted to ensure that each concept of each latent variable is distinct from the other variables. The model has good discriminant validity if the squared AVE value of each exogenous construct exceeds the correlation between that construct and the other constructs. The results of the discriminant validity test are as follows:

Table 4. Fornell-Larcker Criterion Value

Construct	Literacy Digital (X1)	Self- Efficacy (X2)	Commitment Teacher (Z)	Innovation Learning (Y)
Digital Literacy (X1)	0.731			
Self-Efficacy (X2)	0.625	0.846		
Teacher Commitment (Z)	0.691	0.605	0.864	
InnovationLearning (Y)	0.839	0.609	0.723	0.826

Source: Data Processing Results (2025)

Based on Table 4. the results of the analysis with the Fornell-Larcker criteria, the discriminant validity of this model has been met, indicating that each construct is clearly different from the other constructs. The AVE root value for Digital Literacy (0.731), Self-Efficacy (0.846), Teacher Commitment (0.864), and Learning Innovation (0.826) is greater than the correlation between related constructs, for example the correlation between Digital Literacy and Learning Innovation is 0.839 which is still below the AVE root of construct Y. This confirms that each construct is unique and there is no overlapping meaning between variables. In addition, discriminant validity is also supported by the results of cross-loading, where the indicator value for the construct is higher than for other constructs, so the model is declared discriminantly valid.

Table 5. Cross-Loading Value

	Digital Literacy (X1)	Self-Effect (X2)	Teacher Commitment (Z)	Learning Innovation (Y)
X1.1	0.760	0.320	0.449	0.678
X1.2	0.584	0.592	0.411	0.404
X1.3	0.627	0.526	0.565	0.439
X1.4	0.836	0.388	0.572	0.783
X1.5	0.812	0.546	0.527	0.679
X2.1	0.625	0.873	0.589	0.546
X2.2	0.449	0.844	0.460	0.489
X2.3	0.412	0.840	0.465	0.460
X2.4	0.600	0.825	0.517	0.555
Y.1	0.714	0.392	0.577	0.886
Y.2	0.765	0.583	0.592	0.868
Y.3	0.758	0.427	0.550	0.891
Y.4	0.503	0.627	0.689	0.629
Z.1	0.516	0.473	0.869	0.599
Z.2	0.556	0.566	0.863	0.575
Z.3	0.698	0.527	0.859	0.688

Source: Data Processing Results (2025)

Table 4.8 shows the results of the analysis of cross-loading values between indicators against their constructs to assess discriminant validity. An indicator is declared valid if the loading value on the original construct is higher than on other constructs. The results show that all indicators have the highest loading on the appropriate construct, such as X1.4 with a value of 0.836 on Digital Literacy compared to lower loadings on other constructs, and a similar pattern is seen in indicators X2.1, Z.1–Z.3, and Y1.1–Y1.4. Thus, all indicators are proven to have good discriminant validity, indicating that the measurement model can represent the constructs accurately and consistently.

Composite Reliability

Construct reliability can be assessed from the Cronbach's alpha and composite reliability values of each construct. The recommended composite reliability and Cronbach's alpha values are greater than 0.70.

Table 6. Construct Reliability Value

	Cronbach's Alpha	Composite Reliability
Digital Literacy (X1)	0.777	0.849
Self-Efficacy (X2)	0.868	0.910
Teacher Commitment (Z)	0.831	0.898
Learning Innovation (Y)	0.837	0.894

Source: Data Processing Results (2025)

Construct reliability was tested using Cronbach's Alpha and Composite Reliability with a minimum threshold of 0.70 (Hair et al., 2021). The analysis results showed that all constructs met these criteria, namely Digital Literacy ($\alpha = 0.777$; CR = 0.849), Self-Efficacy ($\alpha = 0.868$; CR = 0.910), Teacher Commitment ($\alpha =$

0.831; CR = 0.898), and Learning Innovation ($\alpha = 0.837$; CR = 0.894). Thus, all constructs had high internal consistency and good reliability, so the research instrument was declared reliable for use in the next analysis stage.

Structural Model (Inner Model)

a. Coefficient of Determination (R Square)

The coefficient of determination (R Square) indicates the extent to which the model is able to explain the variance of the dependent variable and can be influenced by the number of variables in the model. An R Square value of 0.67 or more is categorized as good, 0.33 is classified as moderate, and 0.19 is considered weak, which means the higher the R Square value, the stronger the influence of the exogenous variable on the endogenous variable.

Table 7. Coefficient of Determination (R Square) Value

	R Square	R Square Adjusted
Learning Innovation (Y)	0.746	0.735
Teacher Commitment (Z)	0.527	0.513

Source: Data Processing Results (2025)

The coefficient of determination (R Square) measures the ability of independent variables to explain dependent variables, with values between 0–1; the closer to 1 means the better the model. Based on the analysis results, the R Square value for Learning Innovation (Y) is 0.746, and the Adjusted R Square is 0.735, indicating that 74.6% of Y variability is explained by Digital Literacy (X1), Self-Efficacy (X2), and Teacher Commitment (Z). Meanwhile, Teacher Commitment (Z) has an R Square of 0.527 and an Adjusted R Square of 0.513, meaning that 52.7% of its variability is explained by X1 and X2. These results confirm that the model has good and stable predictive ability.

b. Path Coefficient

The path coefficient measures the extent to which the independent variable influences the dependent variable in a structural model. This coefficient indicates the direction of the relationship, whether positive or negative.

- 1) If the path coefficient value is positive, then the influence of one variable on another variable is in the same direction.
- 2) If the path coefficient value is negative, then the influence of one variable on another variable is in the opposite direction.

Table 8. Path Coefficient Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Self-Efficacy (X2) -> Learning Innovation (Y)	0.067	0.062	0.091	0.742	0.459
Self-Efficacy (X2) -> Teacher Commitment (Z)	0.284	0.294	0.11	2,582	0.01
Teacher Commitment					

(Z) -> Learning Innovation (Y)	0.253	0.233	0.092	2,762	0.006
Digital Literacy (X1) -> Learning Innovation (Y)	0.622	0.644	0.116	5,362	0
Digital Literacy (X1) -> Teacher Commitment (Z)	0.513	0.508	0.11	4,647	0

Source: Data Processing Results (2025)

Table 8 shows that Digital Literacy (X1) and Self-Efficacy (X2) have an important role in shaping Teacher Commitment (Z) and Learning Innovation (Y). Digital Literacy has a positive and significant effect on Teacher Commitment ($\beta = 0.513$; $p = 0.000$) and Learning Innovation ($\beta = 0.622$; $p = 0.000$), indicating that the higher the teacher's ability to utilize technology, the higher their commitment and innovation in teaching. Self-efficacy also has a significant positive effect on Teacher Commitment ($\beta = 0.284$; $p = 0.010$), but does not have a significant effect on Learning Innovation ($p = 0.459$), indicating that teacher self-confidence has not directly driven innovation without the support of other factors. In addition, Teacher Commitment is proven to have a significant positive effect on Learning Innovation ($\beta = 0.253$; $p = 0.006$), indicating that professional commitment is an important driver for teachers in creating innovative and quality learning.

c. Hypothesis Testing

The bootstrapping procedure produces a t-statistic value to test the hypothesis by comparing the p-value and t-statistic. The hypothesis is accepted (H_a) and H_0 is rejected if the t-statistic is > 1.96 or the p-value is < 0.05 at a 5% significance level ($\alpha = 0.05$). Thus, the hypothesis acceptance criteria are determined based on the t-statistic value exceeding the t-table or the p-value being less than 0.05.

- 1) If the p-value < 0.05 then it has a significant effect.
- 2) If the p-value > 0.05 then it has no significant effect.

Figure 3. PLS-SEM Bootstrapping Estimation Results

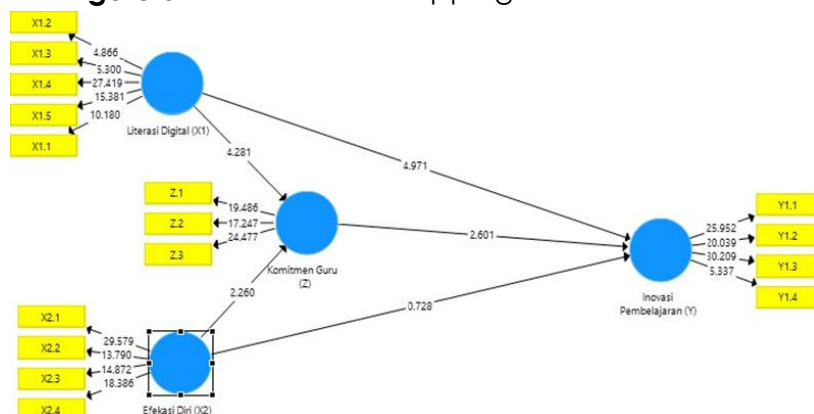


Table 9. Bootstrapping Results

	Original Sample (O)	T Statistics (O/STDEV)	P Values
Digital Literacy (X1) -> Teacher Commitment (Z)	0.513	4,647	0.000
Digital Literacy (X1) -> Learning Innovation (Y)	0.622	5,362	0.000
Self-Efficacy (X2) -> Teacher Commitment (Z)	0.284	2,582	0.010
Self-Efficacy (X2) -> Learning Innovation (Y)	0.067	0.742	0.459
Teacher Commitment (Z) -> Learning Innovation (Y)	0.253	2,762	0.006

Source: Data Processing Results (2025)

The results of the analysis show that Digital Literacy has a positive and significant effect on Teacher Commitment ($\beta = 0.513$; $t = 4.647$; $p = 0.000$) and Learning Innovation ($\beta = 0.622$; $t = 5.362$; $p = 0.000$), indicating that teachers with high digital literacy are more committed, creative, and adaptive to learning technology. Self-Efficacy also has a significant positive effect on Teacher Commitment ($\beta = 0.284$; $t = 2.582$; $p = 0.010$), but does not have a significant effect on Learning Innovation ($\beta = 0.067$; $t = 0.742$; $p = 0.459$), indicating that teacher self-confidence does not directly encourage innovation without other supporting factors. Meanwhile, Teacher Commitment has a significant positive effect on Learning Innovation ($\beta = 0.253$; $t = 2.762$; $p = 0.006$), confirming that professional commitment encourages teachers to continue to innovate in improving the quality of learning.

DISCUSSION

1. The Influence of Digital Literacy on Teachers' Teaching Commitment

The research results show that digital literacy has a positive and significant impact on teachers' commitment to teaching. Teachers' ability to utilize technology not only increases learning effectiveness but also strengthens their sense of professional responsibility. This aligns with the findings of Simanjuntak & Murniarti, (2024) as well as Feng & Sumettikoon, (2024), that digital literacy contributes to increased self-efficacy and professional loyalty. Teachers with digital competence tend to be more committed, creative, and adaptive in facing the demands of modern learning.

2. The Influence of Digital Literacy on Learning Innovation

Digital literacy has also been shown to significantly influence learning innovation. Teachers who master digital skills can create engaging, collaborative, and technology-based learning strategies. These results are consistent with research. Feng & Sumettikoon, (2024) which emphasizes that digital literacy encourages educators to innovate through the use of interactive media and online platforms. However, obstacles such as limited infrastructure

and minimal training still need to be addressed through policy support and ongoing competency development programs.

3. The Influence of Self-Efficacy on Teacher Commitment

This study also found that self-efficacy has a positive effect on teachers' commitment to teaching. Teachers with high confidence in their abilities tend to be more diligent, responsible, and consistent in teaching. This finding aligns with research Arviv Elyashiv & Rozenberg, (2024), which shows that self-efficacy increases professional responsibility and dedication to work. Therefore, increasing self-efficacy needs to be integrated into teacher training and professional development programs.

4. The Influence of Self-Efficacy on Learning Innovation

Contrary to the initial hypothesis, self-efficacy did not significantly influence learning innovation. Although teachers believe in their abilities, this belief is not enough to encourage innovative behavior without environmental support, facilities, and peer collaboration. This finding is supported by Sun et al., (2024) which emphasizes that work engagement and organizational culture are more important determinants of the emergence of innovation than self-efficacy alone.

5. The Influence of Teacher Commitment on Learning Innovation

Teacher commitment has been shown to have a positive and significant impact on learning innovation. Teachers who are highly dedicated to their profession tend to be more open to change and willing to implement new learning approaches. These results align with research. Ahakwa, (2024) as well as Muñoz-Fernández et al., (2025), which emphasizes that professional commitment strengthens innovative behavior in educational practice. Thus, increasing commitment is an important prerequisite for creating sustainable innovation.

6. The Influence of Digital Literacy on Learning Innovation through Teacher Commitment

Mediation analysis shows that teacher commitment is a significant mediator between digital literacy and learning innovation. This means that increased digital skills encourage teacher dedication, which then transforms into innovation in teaching practice. This finding is consistent with studies Yulin & Danso, (2025), which identifies commitment as the link between digital literacy and pedagogical readiness for innovation. Therefore, teacher development strategies must combine strengthening digital literacy with fostering professional commitment.

7. The Influence of Self-Efficacy on Learning Innovation through Teacher Commitment

Research findings indicate that teacher commitment does not significantly mediate the relationship between self-efficacy and learning innovation. Although self-efficacy plays a significant role in psychological

readiness, without the support of creativity and a collaborative environment, its influence on innovation remains limited. Dewanto et al., (2024) research shows that creativity is a stronger mediator than commitment in linking self-efficacy to innovation. Therefore, teacher professional development needs to emphasize the integration of self-efficacy, creativity, and peer collaboration to optimally realize innovation.

The limitations of this study lie in its scope and methodology. The research was conducted only among junior high school teachers in the Anggeraja District with a limited sample size, making it difficult to generalize the findings to other regions or educational levels. Furthermore, the use of a quantitative approach through closed-ended questionnaires does not fully capture the depth of teachers' perceptions and experiences regarding instructional innovation. The analysis using PLS-SEM was also cross-sectional in nature, which limits the ability to explain changes in relationships among variables over time. External factors such as school culture, policy support, and technological environment were also not fully considered as moderating variables that might influence the research outcomes.

CONCLUSION AND RECOMMENDATION

The results of the study indicate that digital literacy has a positive and significant effect on teaching commitment and learning innovation, where teachers with high digital skills are more dedicated, creative, and adaptive in teaching. Self-efficacy also has a positive effect on teaching commitment, but not significantly on learning innovation, indicating that self-confidence needs to be accompanied by institutional and collaborative support to produce real innovation. Furthermore, teacher commitment plays a crucial role in transforming digital literacy into sustainable learning innovation, while self-efficacy through commitment has not shown a significant effect. Overall, digital literacy is a key factor driving teacher commitment and innovation in the digital education era. It is recommended that schools and education offices strengthen digital literacy training and teacher self-efficacy development programs through ongoing mentoring and professional collaboration. Furthermore, technological infrastructure and an innovative culture are needed so that teacher commitment can develop into creative and sustainable learning practices.

REFERENCES

- Ahakwa, I. (2024). Enhancing teachers' commitment: Autonomy and learning in Ghana's basic schools. *Teaching and Teacher Education*, 143, 104556. <https://doi.org/10.1016/j.tate.2024.104556>
- Arifin, A. (2020). THE EFFECT OF TEACHER COMMITMENT AND LEARNING STRATEGIES ON SCHOOL ACHIEVEMENT AND QUALITY IN INTEGRATED ISLAMIC

ELEMENTARY SCHOOLS IN SUMENEP REGENCY. *Adaara: Journal of Islamic Education Management*, 10(2), 154–164.
<https://doi.org/10.35673/ajmpi.v10i2.995>

Arviv Elyashiv, R., & Rozenberg, K. (2024). Fostering early career teachers' preparedness, self-efficacy and professional commitment: The role of teacher education. *Teaching and Teacher Education*, 148, 104691.
<https://doi.org/10.1016/j.tate.2024.104691>

Biezā, K. E. (2020). Digital Literacy. *International Journal of Smart Education and Urban Society*, 11(2), 1–15. <https://doi.org/10.4018/IJSEUS.2020040101>

Cahyaningrum, VD, Tambunan, W., & Tampubolon, H. (2023). The Influence of Self-Efficacy and Digital Literacy on Teachers' Professional Commitment (Case Study at Tarakanita Pluit School, Jakarta). *FONDATIA*, 7(4), 891–902.
<https://doi.org/10.36088/fondatia.v7i4.4151>

Dewanto, W., Syarifudin, E., Hidayat, S., & Suryadi, S. (2024). The Effect of Digital Literacy, Innovative Attitudes, and Interpersonal Communication on Teacher Performance. *IJORER : International Journal of Recent Educational Research*, 5(2), 477–489. <https://doi.org/10.46245/ijorer.v5i2.583>

Feng, L., & Sumettikoon, P. (2024). An empirical analysis of EFL teachers' digital literacy in Chinese higher education institutions. *International Journal of Educational Technology in Higher Education*, 21(1), 42.
<https://doi.org/10.1186/s41239-024-00474-1>

Firdausiah, S., & Etikariena, A. (2021). Innovative Work Behavior and Creative Self-Efficacy in College Students. *Psikologika: Journal of Psychological Thought and Research*, 26(1), 57–84.
<https://doi.org/10.20885/psikologika.vol26.iss1.art4>

Hassan, N., Leow, M.H., Thresia, F., & Qiaoqiao, L. (2024). Exploring Self-Directed Learning Readiness among Undergraduates in ESL Classrooms. *International Journal of Advanced Research in Future Ready Learning and Education*, 34(1), 53–62. <https://doi.org/10.37934/frle.34.1.5362>

Hermaini, J., & Nurdin, E. (2020). How are Students' Mathematical Problem-Solving Abilities from the Perspective of Learning Interest? *JURING (Journal for Research in Mathematics Learning)*, 3(2), 141.
<https://doi.org/10.24014/juring.v3i2.9597>

Isnain, M., & Nurwidawati, D. (2018). THE RELATIONSHIP BETWEEN SELF-EFFICACY AND CAREER MATURITY IN GRADE XI STUDENTS AT SMKN 1 SURABAYA Mauliddian Isnain Desi Nurwidawati. *Journal of Psychological Research*, 05(02), 7.

- Khairunnisa, NS, & Ashila, L. (2024). The Role of Teachers as Innovation Agents: Integrating Effective Learning Models in Comprehensive Classrooms. When teachers guide and apply learning methods. *JIPSD: Journal of Elementary School Education Innovation*, 1(2), 90–97.
- Kristiawan, M., Nipriansyah, N., Yanti, FA, & Viona, E. (2021). Writing and Publication of Classroom Action Research for Teachers. *Basicedu Journal*, 6(1), 95–101. <https://doi.org/10.31004/basicedu.v6i1.1787>
- Kusumawati, GA (2020). IMPLEMENTATION OF CLINICAL SUPERVISION TO IMPROVE TEACHER WORK COMMITMENT. *Journal of Educational Research and Development*, 4(1), 117. <https://doi.org/10.23887/jppp.v4i1.24985>
- Latiana, L. (2019). The Role of Teacher Certification in Improving Educator Professionalism. *Education*, 1(3), 1–16. <https://doi.org/https://doi.org/10.15294/edukasi.v13i1.951>
- Lazar, I., Panisoara, G., & Panisoara, I.-O. (2020). ADOPTION OF DIGITAL STORYTELLING TOOL IN NATURAL SCIENCES AND TECHNOLOGY EDUCATION BY PRE-SERVICE TEACHERS USING THE TECHNOLOGY ACCEPTANCE MODEL. *Journal of Baltic Science Education*, 19(3), 429–453. <https://doi.org/10.33225/jbse/20.19.429>
- Liu, Z. J., Tretyakova, N., Fedorov, V., & Kharakhordina, M. (2020). Digital literacy and digital didactics as the basis for new learning models development. *International Journal of Emerging Technologies in Learning*, 15(14), 4–18. <https://doi.org/10.3991/ijet.v15i14.14669>
- Meyers, E.M., Erickson, I., & Small, R.V. (2013). Digital literacy and informal learning environments: an introduction. *Learning, Media and Technology*, 38(4), 355–367. <https://doi.org/10.1080/17439884.2013.783597>
- Muñoz-Fernández, G.A., Toala-Mendoza, R.D., González-Mohíno, M., & Félix-López, M.E. (2025). Unveiling the nexus of teacher commitment and job satisfaction: insights from Ecuador's educational landscape. *BMC Psychology*, 13(1), 134. <https://doi.org/10.1186/s40359-025-02471-z>
- Ramdayana, IP, & Prasetyono, H. (2022). Innovative Work Behavior of Vocational High School Teachers. *JUPEIS: Journal of Education and Social Sciences*, 1(1), 60–69. <https://doi.org/10.55784/jupeis.Vol1.Iss1.41>
- Sholichah, S., & Pahlevi, T. (2021). The Influence of Perception of the Teaching Profession and Self-Efficacy on Interest in Becoming a Teacher. *Journal of Educational Administration and Management*, 4(2), 187. <https://doi.org/10.17977/um027v4i12021p187>
- Simanjuntak, REC, & Murniarti, E. (2024). The Role of Teachers in Integrating the

Independent Curriculum for Mathematics Subjects in Elementary School Students Phase A. *JlIP - Scientific Journal of Educational Sciences*, 7(9), 9511–9517. <https://doi.org/10.54371/jiip.v7i9.5381>

Sulastri, S., Fitria, H., & Martha, A. (2020). Teacher Professional Competence in Improving the Quality of Education. *Journal of Education Research*, 1(3), 258–264. <https://doi.org/10.37985/jer.v1i3.30>

Sun, J., Zheng, C., Xie, E., Liu, Z., Chu, R., Qiu, J., Xu, J., Ding, M., Li, H., Geng, M., Wu, Y., Wang, W., Chen, J., Yin, Z., Ren, X., Fu, J., He, J., Yuan, W., Liu, Q., ... Li, Z. (2024). A Survey of Reasoning with Foundation Models. <http://arxiv.org/abs/2312.11562>

Wijaya, MH, Khoir, A., & Zaini, AW (2023). Fostering Public Trust: The Transformative Leadership of School Principals. *Indonesian Journal of Education and Social Studies*, 1(1), 51–62. <https://doi.org/10.33650/ijess.v1i1.3475>

Wismawan, KH, Sugihartini, N., & Antara Kesiman, MW (2019). The Effect of the Assure Learning Model Using Rumah Belajar Media in an Effort to Improve Information and Communication Technology Learning Outcomes. *International Journal of Natural Science and Engineering*, 3(3), 130. <https://doi.org/10.23887/ijnse.v3i3.24148>

Yin, Z., Gong, X., Guo, P., & Wu, T. (2019). What Drives Entrepreneurship in the Digital Economy? Evidence from China. *Economic Modelling*, 82, 66–73. <https://doi.org/10.1016/j.econmod.2019.09.026>

Yulin, N., & Danso, S.D. (2025). Assessing Pedagogical Readiness for Digital Innovation: A Mixed-Methods Study. *ArXiv Preprint ArXiv*. <https://doi.org/https://doi.org/10.48550/arXiv.2502.15781>

Zainuddin, Z., Shujahat, M., Haruna, H., & Chu, SKW (2020). The role of gamified e-quizzes on student learning and engagement: An interactive gamification solution for a formative assessment system. *Computers & Education*, 145, 103729. <https://doi.org/10.1016/j.compedu.2019.103729>