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The Influence Of Teachers' Digital Literacy And Learning Communities On The Professional Competency Of Public Primary School Teachers In Sematang Borang District

Rera Oktariya. S
PGRI University, Palembang, Indonesia
Edi Harapan
PGRI University, Palembang, Indonesia
Dessy Wardiah
PGRI University, Palembang, Indonesia

Corresponding Author:reraoktariyas@gmail.com,ehara205@univpgri.palembang.ac.id,dessywardiah77@univpgri.ac.id

Abstract

The challenges of digitalization require teachers to master digital literacy and actively participate in learning communities to enhance their professional competence. This correlational quantitative research aims to analyze the impact of both factors on the professional competence of public elementary school teachers in Sematang Borang District. Data collection utilized questionnaires, while the analysis employed regression analysis along with t-tests and F-tests. The research findings demonstrate that digital literacy partially has a significant effect on professional competence, with an observed t-value of 14.522, which is greater than the critical t-table value of 1.9858 (sig. 0.000). Similarly, learning communities also exert a statistically significant positive influence, indicated by an observed t-value of 16.092, exceeding the critical t-table value of 3.90 (sig. 0.000). Simultaneously, the integration of digital literacy and the role of learning communities contributes significantly to the enhancement of educators' professional competence, as confirmed by an observed F-value of 144.609, which surpasses the critical F-table value of 3.0954 with a significance level of 0.000.

Keywords: digital literacy, learning community, professional competence.

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INTRODUCTION

In the national context, digital transformation in education in Indonesia has accelerated significantly since the outbreak of the COVID-19 pandemic, which has pushed the education system to adapt through the implementation of online learning. This change did not stop during the crisis but continued systematically post-pandemic through the government's school digitalization policy. The implementation of the Independent Curriculum reinforces this transformation by emphasizing flexibility, learning differentiation, and the use of technology as an integral part of the learning process. The current educational paradigm has shifted the role of teachers from mere sources of information to facilitators and designers of relevant learning experiences for students. This transformation requires adaptive competencies and innovative capabilities in synergizing digital technology with student needs. In line with the thinkingArbain et al (2024), technology mastery by educators is a crucial variable that ensures the effectiveness of the implementation of the Independent Curriculum in the school environment.

Policy transformations and shifts in learning models have a direct impact on the functions and responsibilities of teachers in elementary schools. Teachers at this level must meet comprehensive professional competency criteria. These criteria include understanding of teaching materials, expertise in teaching methodologies, integration of digital tools in the classroom, and consistent commitment to continuous improvement. These professional competencies extend beyond simply understanding scientific material. They also reflect teachers' capabilities in packaging and conveying knowledge into meaningful, functional, and applicable understanding for students in their lives.

The professional skills of elementary school teachers are a crucial determinant in shaping the foundation of students' thinking, attitude, and action skills. Highly capable teachers are able to design active learning systems that are aligned with social realities and consistently address the unique characteristics of each student. Therefore, these professional skills serve as a central foundation for enhancing the effectiveness of the learning process and comprehensively raising the quality standards of elementary education (Febriana, 2021).

Teacher professional competence is rooted in the theory of educator professionalism which views teachers as professional workers who are required to have in-depth mastery of scientific substance, advanced pedagogical skills, and the ability to develop themselves continuously to keep up with the rhythm of knowledge renewal and the demands of current technological innovation.(Febriana, 2021)Within this framework, the teacher's function extends beyond the transmission of subject matter; teachers are viewed as lifelong learners who

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continually improve the quality of their teaching practices. The perspective of teacher professionalism emphasizes that the quality of learning is strongly influenced by the teacher's mastery of the subject matter, their ability to design meaningful learning, and their ability to adopt new technologies and learning innovations in accordance with the diversity of individual learners.(DuFour et al., 2016).

Digital literacy among teachers remains uneven, despite the increasing demand for teacher professionalism. Technological literacy for educators goes beyond simply operating digital devices, encompassing the critical thinking skills needed to select and validate information. Furthermore, this digital competency integrates innovative teaching skills, ensuring that technology utilization aligns with safety standards and professional morality within the school environment. Teachers bear the responsibility of producing digital materials that are appropriate to the developmental stages and unique characteristics of elementary school students. Protecting students from cyber threats also relies on teachers' understanding of these moral and digital security aspects. Therefore, mastery of cyberspace is a complex skill, directly determining the effectiveness of the teaching process (Tomczyk & Fedeli, 2022).

In this study, teacher digital literacy is defined as the ability of teachers to access, evaluate, utilize, and create digital content safely, critically, and ethically to support the learning process in elementary schools. Digital literacy is understood as a construct encompassing technical skills, cognitive abilities, and ethical awareness in the use of digital technology, enabling teachers to effectively integrate technology into learning activities.(Tomczyk & Fedeli, 2022).

Digital security and ethics are integral to the operational definition of teacher digital literacy. Teachers are expected to understand personal data protection, copyright, and responsible digital behavior, enabling them to position themselves as role models for students, internalizing patterns of technology use with integrity and ensuring security in digital interactions. All aspects of digital literacy are measured using a Likert-scale research instrument designed to quantitatively and systematically capture teachers' digital literacy mastery.(Tomczyk & Fedeli, 2022).

More specific empirical data at the elementary school level shows that the use of learning technology by elementary school teachers is still suboptimal. In 2024, only around 38% of elementary school teachers were recorded as regularly using the Merdeka Mengajar Platform as a tool for developing and implementing learning. Furthermore, less than 30% of elementary school teachers had the ability to independently develop interactive digital content tailored to student characteristics. This situation indicates that technology use is still dominated by basic

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applications, such as presentations or online assignment submission. Technology-based learning innovations that require creativity and digital learning design are still relatively limited. Thus, the digital transformation of learning in elementary schools has not fully addressed the in-depth pedagogical aspects and is oriented towards learning quality.(Silvy et al., 2025)

The low level of digital literacy among elementary school teachers is closely linked to structural and individual barriers. Limited technological infrastructure in some regions remains a major obstacle to optimal use of digital learning. Furthermore, discontinuous digital literacy training programs make it difficult to consistently develop teacher competencies. High administrative burdens also reduce the time and energy available for independent digital skill development. Demographic factors also play a role, given that the majority of elementary school teachers are aged 45 and above, who tend to require more intensive guidance in adapting to technology. This combination of factors has the potential to hinder the comprehensive strengthening of teachers' professional competencies.(Yulaikhah & Hidayat, 2025).

In addition to digital literacy, teacher learning communities play a strategic role in supporting the continuous development of professional competencies. Teacher learning communities are understood as collaborative spaces that enable teachers to share experiences, reflect on learning practices, and seek solutions to pedagogical challenges. These learning communities include Teacher Working Groups (KKG), Professional Learning Communities (PLC), and digital-based learning communities. Through collective interaction, teachers can build professional knowledge that is contextual and relevant to learning needs. Learning communities also encourage a culture of reflection and lifelong learning for teachers. Therefore, the existence of learning communities is a crucial element in strengthening the professional competency of elementary school teachers.(DuFour et al., 2016)

The teacher learning community is based on the Professional Learning Community (PLC) theory which emphasizes the importance of collaboration, shared reflection, and collective learning as the main strategies in continuously improving teacher professional competence.(DuFour et al., 2016)From a PLC perspective, teachers are viewed as a learning community actively engaged in sharing best practices, discussing learning issues, and designing collaborative solutions to improve the quality of learning in schools. PLC theory views teacher professional development not as a momentary individual activity, but as a continuous, systematic, and contextual social process that takes place within the teacher's own work environment.(Lomos et al., 2025).

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Nationally, elementary school teacher participation in learning communities shows a relatively high membership rate. Approximately 85% of elementary school teachers are registered as members of the KKG at the cluster or sub-district level. However, the level of active participation in learning community activities only reaches around 60%, indicating a gap between membership and actual involvement. Various regional studies reveal that learning community activities still focus on learning administration and solving basic pedagogical problems. Discussions related to technology integration and digital learning innovation are still not a primary agenda in many communities. This situation has resulted in the learning community's potential to support teachers' digital literacy being underutilized.(Arbain et al., 2024)

The COVID-19 pandemic has become a crucial momentum in the transformation of teacher learning communities towards the use of digital technology. In 2020–2021, there was a significant increase in the use of online learning communities as an alternative to face-to-face meetings. This development continued in 2022–2023, when most teacher communities began adopting a hybrid model combining offline and online meetings. However, the use of digital collaboration platforms remains limited to basic communication and information sharing. The use of technology for in-depth collaboration, developing learning innovations, and data-driven reflection has not been optimal. Therefore, the transformation of digital learning communities still requires strengthening to truly improve teachers' professional competence sustainably.(Lomos et al., 2025)

Several previous studies have examined teachers' digital literacy and learning communities as factors influencing the quality of teacher professionalism. Empirical findings from Arbain et al. (2024) confirm that the professionalism of elementary school educators is positively and significantly influenced by digital literacy skills and participation in learning communities. This implies that the synergy between technological proficiency and a collaborative culture makes teachers more flexible in formulating and implementing classroom instruction. Similarly, research published by Susilowati and Haryono (2025) strengthens evidence that mastery of digital technology makes a concrete contribution to strengthening pedagogical and professional competence, enabling educators to integrate relevant and appropriate technology. These results reinforce the assumption that digital literacy is a key element in developing teachers' professional competence in the digital education era.

However, most previous research still suffers from limitations in scope and focus. Many studies were conducted in specific areas with urban characteristics or at varying educational levels, thus limiting the generalizability of the findings. Furthermore, a number of studies only emphasize a single independent variable, such as digital literacy or learning communities,

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separately. Studies that integrate both variables as simultaneous factors are still relatively rare. This situation is increasingly evident in the context of elementary school teachers in non-urban areas or certain sub-districts with different social and infrastructure characteristics. Therefore, the need for more comprehensive and contextual research is increasingly urgent.(Mak & Pun, 2025).

Based on all the theoretical explanations and field data, strengthening the professional capacity of educators is an absolute requirement to ensure the effectiveness and quality of the teaching process at the elementary school level. This need is increasingly pressing amidst the current wave of major changes in the digitalization of the education system. Teacher digital literacy and the existence of learning communities are seen as two strategic factors that play a crucial role in teacher professional development. However, empirical studies examining the influence of both simultaneously at the public elementary school level, particularly in the Sematang Borang District, are still relatively limited. Furthermore, the characteristics of the region, which has varying access to technology and professional development support, demand objective and measurable data-based studies. Based on these arguments, the implementation of this research is crucial through the application of quantitative methods and statistical analysis. This step aims to produce valid factual data that can serve as a strategic reference for policymakers in formulating programs for developing elementary school teacher skills on an ongoing basis. The relevance of this research is further emphasized by the need for objective factual data as a foundation for formulating education policies. Through the application of quantitative data analysis, this study aims to accurately map the influence of technological proficiency and collective engagement on the quality of teacher professionalism in elementary schools. The output of this analysis is expected to provide a tangible contribution as a basis for formulating strategies for improving teacher skills that are applicable and adaptive to changes in the field, not just concepts on paper. Furthermore, the data generated by this research can be used to maximize the function of teacher working groups as a means of strengthening capabilities based on aspects of group collaboration. Strengthening teachers' digital literacy can also be directed in a more systematic and sustainable manner. Thus, this research has strategic relevance for improving the quality of elementary education.(Lomos et al., 2025)

The originality of this research rests on a quantitative analysis conducted jointly to examine the impact of teachers' digital skills and study group activities on the professional capabilities of public elementary school teachers in Sematang Borang District. This region has its own unique characteristics in terms of social structure, geographic location, and accessibility to technological facilities compared to urban areas. Unlike previous studies, which mostly examined digital literacy

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variables or learning environments separately, and often focused on secondary school subjects, this study integrates both elements as instruments for strengthening the professional competence of teachers at the elementary level. This evidence is realized through the use of standardized measurement tools and the application of inferential statistics to analyze their effects, both individually and together.

This research is expected to address the limitations and gaps in previous studies. This research contributes to integrating digital literacy and learning communities as two important factors that are simultaneously tested against the professional competence of elementary school teachers. The theoretical contribution of this research is manifested in the modeling of professional competencies relevant to the demands of today's digital transformation. Empirically, this research confirms the significant influence of digital literacy and learning community activities on the professional performance of elementary school teachers in Sematang Borang District through simultaneous and partial testing. Practically, the output of this research is expected to guide policymakers in designing technological literacy development initiatives and strengthening teacher collaboration platforms as concrete steps to improve the quality of elementary school education.

RESEARCH METHODOLOGY

This study applies a quantitative paradigm that focuses on objectively quantifying variables through statistical procedures to test the significance of hypotheses. The adopted design is explanatory quantitative, aiming to investigate the causal relationship between digital literacy and learning communities on teacher professionalism. This approach is implemented through a survey research method with an ex post facto design. In line with Sugiyono's (2022) view, this design was chosen based on the characteristics of the study, which evaluates the relationship between variables without any direct intervention or treatment of the research subjects. This study used a questionnaire instrument as the primary data collection tool, which was structured based on research variable indicators and measured using a five-level Likert scale, ranging from strongly disagree to strongly agree. The use of a Likert-scale questionnaire aims to obtain quantitative data that systematically and measurably represent respondents' perceptions and attitudes (Creswell & Creswell, 2018).

The population of this study was all elementary school (SD) teachers actively teaching in Sematang Borang sub-district in 2026. This population includes teachers with various characteristics, including employment status (ASN and non-ASN teachers), length of service, and

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formal educational background. The selection of elementary school teachers as the population was based on their strategic role as the main foundation in developing student competencies, as well as being the main actors in the implementation of digital literacy and the development of learning communities in the school environment.

Given the relatively large and heterogeneous population of elementary school teachers in the study area, this study did not allow for the entire population to be included as respondents. Therefore, this study adopted a probability sampling procedure, specifically the simple random sampling method, to ensure an equal probability for each element of the population to be included in the sample. This strategy was implemented to eliminate researcher subjectivity and ensure the data's representativeness of the parent population (Sugiyono, 2022). The sample size was calculated using the Slovin formula with a 5% margin of error, a standard commonly used in social and educational research to maintain the precision of parameter estimates. After determining the sample size at 95 respondents, the next step was to allocate the sample to each educational institution.

The data collection strategies used in this study are outlined through questionnaires, observation, and documentation. Data analysis employed inferential statistics to draw generalizing conclusions from the sample to the population. To ensure the validity of the econometric model, a series of prerequisite analysis tests were conducted, including normality, linearity, and multicollinearity tests.

RESULTS AND DISCUSSION

Results

This study uses a quantitative approach aimed at capturing the empirical landscape and assessing the influence of digital literacy among educators and learning communities on the professional skills of public elementary school teachers in Sematang Borang District. Data descriptions in this study were organized to provide a comprehensive understanding of the context surrounding the variables studied, based on information collected from participants. Data for the study were obtained through a survey method, using questionnaires distributed to participants to gain insights into teachers' digital literacy levels, their participation in learning communities, and their professional skills.

Data requirements testing is a crucial step in determining whether there are any discrepancies in the research data. The purpose of this evaluation is to ensure the data is suitable for analysis, allowing us to determine whether to proceed with the data analysis phase. The

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standards for the test data used in this study are detailed below.

1. **Normality Test**

Table 1. Digital Literacy Normality

Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Teacher Digital Literacy	.085	95	.089	.943	95	.000

Source: Primary Data, Managed (2026)

In the table provided above, the Kolmogorov-Smirnov normality test revealed a significance value of 0.089. This indicates that the data related to the teacher digital literacy variable (X1) follows a normal distribution (Sig>0.05). The following graph displays the results of the normality test:

Table 2. Normality of Learning Communities

Table 4.12 Normality of Learning Community

Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Learning Community	.089	95	.059	.947	95	.001

Source: Primary Data, Managed (2026)

In the table provided above, the Kolmogorov-Smirnov normality test revealed a significance value of 0.059. This indicates that the data regarding the learning community variable (X2) exhibits a normal distribution (Sig > 0.05).

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Table 3. Normality of Teachers' Professional Competence

Tests of Normality						
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Teacher Professional Competence	.086	95	.080	.951	95	.001
a. Lilliefors Significance Corrections						

Source: Primary Data, Managed (2026)

2. Linearity Test

Table 4. Digital Literacy Linearity Test

ANOVA Table							
			Sum of Squares	Df	Mean Squares	F	Sig.
Teacher Professional Competence * Teacher Digital Literacy	Between Groups	(Combined)	1887.185	21	89,866	10,248	.000
		Linearity	1753,882	1	1753,882	200,008	.000
		Deviations from Linearity	133,303	20	6,665	.760	.750
	Within Groups		640,142	73	8,769		
	Total		2527.326	94			

Source: Primary Data, Managed (2026)

The table above shows a significance value of deviations from linearity of approximately 0.750. This indicates a linear relationship between teacher digital literacy (X1) and teacher professional competence (Y) (Sig>0.05).

Table 5. Linearity Test of Learning Community

ANOVA Table							
			Sum of Squares	df	Mean Squares	F	Sig.
Teacher	Between	(Combined)	2055,781	22	93,445	14,268	.000

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Professional Competence * Learning Community	Groups	Linearity	1859,492	1	1859,492	283,925	.000
		Deviations from Linearity	196,289	21	9,347	1,427	.135
	Within Groups		471,545	72	6,549		
	Total		**2527.326**	**94**			

Source: Primary Data, Managed (2026)

In the previously referenced table, variations from the linearity significance value of 0.135 have been identified. This indicates that there is a linear correlation between the learning community (X2) and teacher professional competence (Y) (Sig > 0.05).

3. Multicollinearity Test

Table 6. Multicollinearity Test

Coefficientsa			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Teacher Digital Literacy	.206	4,856
	Learning Community	.206	4,856

Source: Primary Data, Managed (2026)

In the results in the table above, the tolerance value for each variable is below 0.10, indicating that there is no correlation between the independent variables. Likewise, the VIF calculation indicates that no independent variable exceeds a VIF of 10, which leads us to conclude that there are no indicators of multicollinearity among the independent variables in the regression model.

4. Heteroscedasticity Test

Table 7. Heteroscedasticity Test

Coefficientsa					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Errors	Beta		

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1	(Constant)	12,325	4,212		2,926	.004
	Teacher Digital Literacy	-.077	.062	-.277	-1,249	.215
	Learning Community	.003	.065	.010	.047	.963

Source: Primary Data, Managed (2026)

According to the table provided, the Glejser test significance value for the teacher digital literacy variable (X1) is 0.215, while for the learning community variable (X2) it is 0.963. This indicates that there is no indication of heteroscedasticity in the regression model. Furthermore, to further support the findings of the heteroscedasticity test, the following scatterplot pattern is used.

The Influence of Digital Literacy on the Competency of Public Elementary School Teachers in Sematang Borang District

a. Correlation Analysis

Table 8. Correlation coefficient of variable X1 against Y

Correlations			
		Teacher Digital Literacy	Teacher Professional Competence
Teacher Digital Literacy	Pearson Correlations	1	.833**
	Sig. (2-tailed)		.000
	N	95	95
Teacher Professional Competence	Pearson Correlations	.833**	1
	Sig. (2-tailed)	.000	
	N	95	95
**. Correlations are significant at the 0.01 level (2-tailed).			

Source: Primary Data, Managed (2026)

In the given table, the correlation coefficient for teachers' digital literacy (X1) and their

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professional competence (Y) is 0.833. This indicates a strong positive relationship between these two factors.

b. Analysis of the Coefficient of Determination

Table 9. Coefficient of Determination between X1 and Y

Model Summary				
Model	R	R Squares	Adjusted R Squares	Standard Errors of the Estimate
1	.833a	.694	.691	2,884
a. Predictors: (Constant), Teacher Digital Literacy				

Source: Primary Data, Managed (2026)

In the table above, the coefficient of determination (R Squares) value of approximately 0.694 has been calculated. This indicates that the teacher digital literacy variable (X1) can explain 0.694, or 69.4%, of the observed variance in the teacher professional competence variable (Y). The remaining 30.6% is due to other factors or variables not included in the study.

a. Simple Linear Regression Analysis

Table 10. Simple linear regression between X1 and Y

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Errors	Beta		
	(Constant)	45,794	6,694		6,841	.000
	Teacher Digital Literacy	.688	.047	.833	14,522	.000
a. Dependents Variable: Teacher Professional Competence						

Source: Primary Data, Managed (2026)

c. Partial Test (t-Test)

To test the hypothesis regarding the influence of Digital Literacy (X1) on Teacher Professional Competency (Y), it can be seen in the following table:

Table 11. Hypothesis Test of the Effect of X1 on Y

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Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Errors	Beta		
	(Constant)	45,794	6,694		6,841	.000
	Teacher Digital Literacy	.688	.047	.833	14,522	.000
a. Dependents Variable: Teacher Professional Competence						

Source: Primary Data, Managed (2026)

In the results of the simple linear regression analysis discussed previously, the calculated value of t count is 14.522, while the critical value of t table is 1.9858. As a result, it can be concluded that if t count exceeds t table, the significance value of Sig (0.000) decreases from 0.05, which results in the rejection of Ho and acceptance of Ha. Thus, there is a significant relationship between teachers' digital literacy and their professional competence.

The Influence of Learning Communities on the Competency of Public Elementary School Teachers in Sematang Borang District

a. Correlation Coefficient Analysis

Table 12. Correlation coefficient of variable X2 against Y

Correlations			
		Learning Community	Teacher Professional Competence
Learning Community	Pearson Correlations	1	.858**
	Sig. (2-tailed)		.000
	N	95	95
Teacher Professional Competence	Pearson Correlations	.858**	1
	Sig. (2-tailed)	.000	
	N	95	95
**. Correlations are significant at the 0.01 level (2-tailed).			

Source: Primary Data, Managed (2026)

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In the previous table, the correlation coefficient for the learning community variable (X2) and the teacher professional competence variable (Y) is 0.858. This indicates a significant positive correlation between the two variables.

b. Analysis of the Coefficient of Determination

Table 13. Coefficient of Determination between X2 and Y

Model Summary				
Model	R	R Squares	Adjusted R Squares	Standard Errors of the Estimate
1	.858a	.736	.733	2,680
a. Predictors: (Constant), Learning Community				

Source: Primary Data, Managed (2026)

In the information presented in the table above, the coefficient of determination (R Squares) has reached a value of 0.736. This result indicates that the learning community variable (X2) significantly contributes to explaining the teacher professional competence variable (Y) at a level of 0.736 or 73.6%. Conversely, the remaining 26.4% is influenced by other factors or variables not included in the analysis.

c. Simple Linear Regression Analysis

Table 14. Simple linear regression between X2 and Y

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Errors	Beta		
	(Constant)	37,747	6,541		5,771	.000
	Learning Community	.741	.046	.858	16,092	.000
a. Dependents Variable: Teacher Professional Competence						

Source: Primary Data, Managed (2026)

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d. Partial Test (t-Test)

Table 15 Hypothesis Test of the Effect of X2 on Y

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Errors	Beta		
	(Constant)	37,747	6,541		5,771	.000
	Learning Community	.741	.046	.858	16,092	.000
a. Dependents Variable: Teacher Professional Competence						

Source: Primary Data, Managed (2026)

In the results obtained from the simple linear regression analysis, the calculated t value was determined to be 16.092, while the t table reached 1.9858. Therefore, it can be concluded that if the calculated t exceeds the t table, at a Sig value (0.000) which falls below 0.05, it encourages the rejection of Ho and acceptance of Ha. Consequently, there is a significant impact of the learning community on teacher professional competence.

The Joint Influence of Digital Literacy and Learning Communities on the Professional Competence of Public Elementary School Teachers in Sematang District Form

a. Correlation Analysis and Coefficient of Determination

Table 16. Correlation Coefficient and Determination Coefficient

Model Summary				
Model	R	R Squares	Adjusted R Squares	Standard Errors of the Estimate
1	.871a	.759	.753	2,575
a. Predictors: (Constant), Learning Community, Teacher Digital Literacy				

Source: Primary Data, Managed (2026)

In the table provided, the correlation coefficient between the teacher digital literacy variable (X1) and the learning community variable (X2) together with the teacher professional competence variable (Y) was found to be 0.871. This indicates a strong positive correlation

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between teacher digital literacy (X1) and the learning community (X2) when linked to teacher professional competence (Y).

The coefficient of determination (Adjusted R Squares) reached 0.753. This indicates that the combined variables of teacher digital literacy (X1) and learning community (X2) explain 75.3% of the variance in teacher professional competence (Y). The remaining 24.7% is due to other factors or variables not included in the study.

b. Multiple Linear Regression Analysis

The results of the multiple linear regression analysis between the variables Digital Literacy (X1) and Learning Community (X2) together on the variable Teacher Professional Competence (Y) can be seen in the following table:

Table 17. Multiple Linear Regression Between Variables X1 and X2 Together Against Y

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Errors	Beta		
	(Constant)	35,302	6,339		5,569	.000
	Teacher Digital Literacy	.276	.093	.334	2,955	.004
	Learning Community	.484	.098	.561	4,966	.000
a. Dependents Variable: Teacher Professional Competence						

Source: Primary Data, Managed (2026)

In the table above, a multiple linear regression equation can be made, namely:

c. Simultaneous Test (F Test)

Table 4.31 Hypothesis Test of the Effect of X1 and X2 on Y

ANOVA						
Model		Sum of Squares	df	Mean Squares	F	Sig.
	Regression	1917,401	2	958,700	144,609	.000b

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	Residual	609,925	92	6,630		
	Total	2527.326	94			
a. Dependents Variable: Teacher Professional Competence						
b. Predictors: (Constant), Learning Community, Teacher Digital Literacy						

Source: Primary Data, Managed (2026)

In the results of the multiple linear regression analysis mentioned earlier, the Fcount value has been determined to be 144.609, while the Ftable is at 3.0954. This gives an indication that Fcount is greater than Ftable, with a significance level (Sig) of 0.000, which is below 0.05, resulting in the rejection of Ho and acceptance of Ha. Consequently, there is a significant influence of digital literacy of teachers and the learning community as a whole on the professional competence of educators. effectively improving the quality of education.

The Influence of Teachers' Digital Literacy on the Professional Competence of Elementary School Teachers

Evaluation of the impact of teachers' digital literacy on professional competence was conducted through direct regression analysis. The test results showed a t-count value of 14.522 which exceeded the t-table value of 1.9858 (14.522 > 1.9858). The significance level obtained was recorded at 0.000, this value is below the threshold of 0.05 (0.000 < 0.05). This condition underlies the rejection of Ho and acceptance of Ha. Based on the data achievement, the variable of teachers' digital literacy (X1) has a significant influence on teachers' professional competence (Y). This finding strengthens the hypothesis regarding the real impact of teachers' digital literacy on their professional competence.

The mutual relationship between teachers' digital literacy and professional competence is illustrated by a product-moment correlation coefficient of 0.833. This figure indicates a close and strong relationship between the two variables. Meanwhile, calculations in the coefficient of determination test yielded an R-square value of 0.694. These data indicate that teachers' digital literacy contributes 69.4% to the variation in their professional competence. The remaining 30.6% is influenced by other variables outside the focus of this study.

The empirical data in this study confirms the crucial role of digital literacy in spurring the improvement of teachers' professional competence, particularly amidst the current rapid development of educational technology. A strong grasp of digital literacy facilitates educators' access to a variety of instructional resources, including scientific journals, instructional videos, and

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digital-based educational platforms. This capability also supports teachers in producing creative and interactive teaching materials to stimulate students' learning motivation. This reality demonstrates that the essence of digital literacy goes beyond simply operating technological devices. This concept encompasses information management capabilities and innovative teaching methods. Therefore, strengthening teachers' digital literacy is positively correlated with improving their professional competence.

Based on the entire series of evaluations, it can be concluded that teachers' digital literacy significantly impacts their level of professional competence. This conclusion is strongly supported by statistical analysis validation, a well-established theoretical foundation, and confirmation from various relevant previous research findings. Mastery of digital literacy not only positions teachers as technology users but also acts as a catalyst for comprehensively improving the quality of education. Therefore, it is urgent to consistently escalate teachers' digital literacy through ongoing training programs, workshops, and other professional development responsibilities. Through these efforts, educators will be able to meet the challenges of the dynamic digital era while making a real contribution to improving the quality of education.

The Influence of Learning Communities on the Professional Competence of Elementary School Teachers

Direct regression test analysis was applied in this study to measure the influence of learning community activities on teacher professional competence. Based on the results of data testing, the calculated t-value for the learning community variable was 90.025, which significantly exceeded the t-table value of 3.90 (16.092 > 3.90). This achievement was strengthened by a significance level of 0.000, this value was below the threshold criterion of 0.05. This statistical indicator became the basis for rejecting Ho and accepting Ha. Through the results of this analysis, it can be concluded that learning community activities (X2) have a significant impact on teacher professional competence (Y), this condition also proves the truth of the hypothesis which states that learning community activities influence teacher professional competence.

The close relationship between learning community activities and teacher professional competence is illustrated by the product-moment correlation coefficient of 0.669. This figure represents a strong degree of relationship between the two variables. Furthermore, calculations in the coefficient of determination test show an R-square value of 0.448. This value implies that the contribution of learning community activities can explain 44.8% of the variance in teacher professional competence. The remaining percentage of 55.2% is conditioned by other variables or

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factors outside the scope of this study.

Based on the accumulated information, it can be concluded that participation in learning community activities significantly contributes to the escalation of teachers' professional competence. This argument is validated by statistical analysis, reinforced by relevant theoretical frameworks, and confirmed by empirical findings from various previous studies. Learning communities not only position themselves as platforms for knowledge exchange but also project a path for the continuous acceleration of educator professionalism. Therefore, the active involvement of teachers in various learning communities is essential to optimize their competence. This strategic step, in subsequent manifestations, will trigger substantial improvements in the quality of education in the school environment.

The Influence of Teacher Digital Literacy and Learning Communities on Teacher Professional Competence

Multiple linear regression analysis was applied in this study to test and measure the extent to which teachers' digital literacy variables and active participation in the community. The following is an academic paraphrase of your submitted manuscript. The paragraph structure is adjusted exactly to the source text (consisting of a continuation of the previous paragraph, two paragraphs of statistical results, two paragraphs of theoretical basis, and one opening sentence of a new paragraph) to maintain the consistency of your scientific manuscript.

Collective learning has a real impact on their professional competence. The test results show that the $F_{\text{calculated}}$ value of 144.609 exceeds the F_{table} value of 3.0954 ($144.609 > 3.0954$). This is reinforced by the significance level at 0.000, this value is below the threshold of 0.05. This statistical indicator underlies the rejection of Ho and acceptance of Ha. Based on the data achieved, it can be concluded that the integration of teachers' digital literacy variables (X_1) and learning community activities (X_2) has a significant influence on teachers' professional competence (Y). This finding strengthens the hypothesis that there is a simultaneous influence of teachers' digital literacy and collective learning community activities on teachers' professional competence.

The simultaneous relationship between teachers' digital literacy and collective learning community activities on their professional competence is illustrated by the multiple correlation coefficient (R) of 0.871. This figure indicates a very strong relationship between the independent and dependent variables. Meanwhile, the Adjusted R-Square value from the coefficient of determination test was recorded at 0.753. These data indicate that together, the variables of

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teacher digital literacy and learning community activities contribute 75.3% to the variation in teachers' professional competence. The remaining 24.7% is influenced by other variables outside the focus of this study.

The empirical data in this study confirms the crucial role of integrating digital literacy and active involvement in learning communities in fostering teacher professional competence. Mastery of digital literacy facilitates educators' access to, management of, and efficient use of various technology-based learning tools. Consistent with this, learning communities serve as a collective platform for teachers to build synergy, share experiences, and formulate creative teaching methods. This dynamic interaction between individual skills and the strengthening of the professional ecosystem significantly contributes to the advancement of teacher professional competence.

In conclusion, it can be emphasized that the integration of teachers' digital literacy and involvement in collective learning community activities has a significant impact on the development of their professional competence. These two dimensions confirm and complement each other in boosting the overall quality of education. Therefore, strategies for strengthening teachers' professional competence must be designed through a comprehensive approach, emphasizing not only accelerating individual digital skills but also optimizing the role of learning communities as the primary foundation for sustainable professional development. Through this formula, educators will be well-prepared to anticipate the challenges of the digital era while contributing effectively to improving the quality of education.

CONCLUSION

Based on the results of the study and discussion, it can be concluded that:

1. Educators' digital literacy abilities greatly influence the professional skills of elementary school teachers in Sematang Borang District, with a t value of 14.522, exceeding the t table value of 1.9858 (14.522 > 1.9858) and a significance level of 0.000, which is lower than 0.05.
2. In addition, individual learning communities are very important in improving the professional abilities of elementary school teachers in Sematang Borang District, with a calculated t score reaching 16.092, different from the t table value of 3.90 (16.092 > 3.90) and a significance value of 0.000, which is below 0.05.

The combination of teacher digital literacy and learning community significantly influences teacher professional competence, as evidenced by the Fcount score of 144.609, which exceeds

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the Ftable value of 3.0954 (144.609 > 3.0954), at a significance value of 0.000, which is less than 0.05.

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