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From Collaboration to Competence: How Learning Communities and Digital Platforms Enhance Pedagogical Skills of Primary Teachers

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Abstract: This study aims to analyze the effect of learning community effectiveness and the use of the Rumah Pendidikan Platform on the pedagogical competence of public elementary school teachers in Tanggungharjo District, Indonesia. A quantitative survey approach was employed, involving 137 teachers selected through proportional random sampling. Data were collected using questionnaires that had undergone validity and reliability testing and were analyzed using simple and multiple linear regression with SPSS 27. The results indicate that learning community effectiveness has a positive and significant effect on teachers' pedagogical competence ($r = 0.820$; $R^2 = 0.703$), explaining 70.3% of the variance. The use of the Rumah Pendidikan Platform also demonstrates a positive and significant effect ($r = 0.684$; $R^2 = 0.469$), accounting for 46.9% of the variance. Simultaneously, learning community effectiveness and platform utilization significantly influence pedagogical competence ($R = 0.852$; $R^2 = 0.725$). These findings highlight the importance of strengthening learning communities and optimizing digital education platforms to enhance teachers' pedagogical competence. The study recommends that education authorities prioritize integrated digital training initiatives within teacher working groups to ensure sustainable improvement in pedagogical competence.

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Introduction

Pedagogical competence is an essential competence that teachers must have because it is directly related to the ability to understand student characteristics, design learning, implement effective learning processes, and conduct continuous learning outcome evaluations. Teachers with good pedagogical competence are able to create meaningful, adaptive, and student-centered learning (Andarwati et al., 2023). Therefore, strengthening teachers' pedagogical competencies has become a strategic agenda in improving the quality of basic education in Indonesia.

Based on the elementary school education report in Tanggungharjo District, the average learning quality score (covering classroom management, psychological support, and teaching methods) increased from 67.61 in 2024 to 68.40 in 2025, with the lowest scores recorded at 52.98 in 2024 and 59 in 2025, and the highest scores at 84.17 in 2024 and 85 in 2025. Low pedagogical competence may negatively affect classroom learning processes; therefore, efforts to improve learning quality are needed. One recommended strategy is the implementation of learning community activities that involve teachers and educational staff in structured and continuous collaborative learning with clear and measurable goals to enhance teaching quality and student learning outcomes. This finding is consistent with

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Arifin and Hanif (2024) and Wulandari et al. (2025), who reported that learning communities have a positive effect on pedagogical competence.

Along with the acceleration of digital transformation in education, teacher professional development no longer depends solely on conventional training but also on learning communities and the use of digital education platforms. Learning communities serve as collaborative spaces for teachers to share good practices, engage in professional reflection, and continuously improve their pedagogical competencies (Faridah et al., 2025). Previous studies have shown that teachers' active involvement in learning communities contributes positively to improving the quality of learning and teacher professionalism.

On the other hand, the Ministry of Education, Culture, Research, and Technology has developed the Rumah Pendidikan Platform as an integrated platform designed to facilitate access to learning resources, improve the effectiveness of educational services, and support teacher training and collaboration (Kemendikbudristek, 2023). This platform provides various features, such as teaching modules, self-directed training, online communities, and sharing of good practices, which have the potential to improve teachers' pedagogical competencies when used optimally. Recent studies show that the use of digital education platforms, including the Merdeka Mengajar Platform, which is now integrated into Rumah Pendidikan, has a positive and significant effect on teachers' pedagogical competencies (Supartiningsih et al., 2024; Irfan & Rahman, 2024). Pedagogical competence is a core component of teacher professionalism because it determines teachers' ability to design, implement, and evaluate meaningful learning (Andarwati et al., 2023). In Indonesia, strengthening this competence has become increasingly urgent amid digital transformation policies initiated by the Ministry of Education, Culture, Research, and Technology. One strategic initiative is the development of the Rumah Pendidikan Platform, an integrated digital hub intended to support teacher training, access to teaching resources, and professional collaboration (Pusdiklat GTK, 2023). Although digital platforms offer scalability and flexibility, their effectiveness depends on teachers' willingness and capacity to adopt them. The Technology Acceptance Model (TAM) explains that technology adoption is influenced by Perceived Usefulness and Perceived Ease of Use (Indyah & Bayu, 2021). Teachers may resist the platform if they perceive it as administratively burdensome or technically complex, particularly those with limited digital literacy. Thus, technological provision alone does not automatically ensure pedagogical transformation.

From an instructional perspective, the Technological Pedagogical Content Knowledge framework emphasizes that effective digital integration requires the intersection of technological, pedagogical, and content knowledge. Without this integration, teachers may use the platform only superficially (e.g., downloading modules) without improving instructional quality (Hidayati et al., 2024). This indicates a gap between technological access and pedagogical application. Furthermore, collaborative learning communities often show a stronger influence on pedagogical competence because professional learning is socially constructed. This aligns with the social constructivist view of Lev Vygotsky, who emphasized that knowledge develops through social interaction. Therefore, while digital platforms expand access to resources, learning communities may provide stronger contextual support and reflective dialogue (Lie, 2020; Stoll & Seashore Louis, 2021). Based on these perspectives, this study critically examines the integration of learning communities (social dimension) and the Education Hub Platform (technological dimension). Unlike previous studies that focused on each variable separately, this research analyzes their simultaneous influence on teachers' pedagogical competence within a theoretically grounded framework (TAM and TPACK)

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However, the reality in the field shows that not all teachers have optimally utilized learning communities and the Rumah Pendidikan Platform. This phenomenon also occurs in Tanggungharjo District, previous studies have predominantly examined teacher professional development from two separate perspectives. On the one hand, several studies emphasize the role of learning communities in strengthening pedagogical competence. Research by Arifin and Hanif (2024), Faridah et al. (2025), and Nurdin et al. (2025) demonstrates that active participation in professional learning communities significantly improves reflective practice, collaboration, and instructional quality. These studies position learning communities as social-constructivist spaces that foster pedagogical growth through interaction and shared experience.

On the other hand, a growing body of research focuses on digital education platforms such as the Rumah Pendidikan Platform and its related systems. Studies by Hidayati et al. (2024), Prasetyaningsih et al. (2024), and Lena et al. (2023) report that digital platforms positively contribute to teacher competence, particularly in lesson planning, access to teaching modules, and independent professional development. These studies generally frame digital platforms as technological enablers that enhance efficiency and accessibility.

However, the existing literature reveals a conceptual and empirical gap. Most prior research investigates learning communities (social dimension) and digital platforms (technological dimension) independently. Limited studies analyze how these two elements interact simultaneously within a unified professional development ecosystem. In other words, there is insufficient empirical evidence explaining whether pedagogical competence is more effectively strengthened through the synergy between collaborative culture and digital infrastructure rather than through either approach alone.

This gap is particularly relevant in the context of Indonesia's educational transformation, where policy implementation often promotes digital platforms as primary reform tools without fully integrating them into existing teacher working groups (KKG) or professional learning communities. The absence of simultaneous analysis may lead to fragmented policy recommendations that overlook the interplay between social learning processes and technological adoption mechanisms.

Based on this research gap, this study aims to analyze the effect of the effectiveness of learning communities and the utilization of the Rumah Pendidikan Platform on the pedagogical competence of elementary school teachers in Tanggungharjo District. By integrating both variables within a single regression model and grounding the analysis in theoretical frameworks such as the Technology Acceptance Model (TAM) and TPACK, this research contributes a more holistic understanding of teacher professional development. It moves beyond isolated analyses and provides empirical evidence on the synergistic relationship between social collaboration and digital platform utilization in improving pedagogical competence. Where there are still variations in the level of teacher participation in learning communities and the intensity of digital platform utilization, which is thought to have an impact on the lack of maximization of teachers' pedagogical competencies.

Research Method

This study uses a quantitative approach with a survey method. This approach was chosen to analyze the effect of the effectiveness of learning communities and the use of the Rumah Pendidikan Platform on teachers' pedagogical competencies in an objective and measurable manner.The population in this study was all public elementary school teachers in Tanggungharjo District. The population in this study included all elementary school (SD) teachers in Tanggungharjo District, Grobogan Regency, totaling approximately 208 teachers.

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This population consisted of teachers who teach at various public elementary schools in the area. To determine a sample from a population, the Slovin formula is used as follows:

$$n = \frac{N}{1 + Ne^2}$$

Figure 1. Slovin Formula

$n=\frac{208}{1+208\ (0{,}05)^2} = \frac{208}{1+\ 0.52} = \frac{208}{1.52}$ = 136,842 rounded up to 137. Therefore, the sample size used in this study was 137 respondents, which was determined using proportional sampling techniques, so that each school had an equal chance of being represented as respondents.

Data collection was conducted using a closed questionnaire with a five-point Likert scale. The research instrument consisted of three variables, namely the effectiveness of the learning community, the use of the Rumah Pendidikan Platform, and teachers' pedagogical competence. This research instrument was developed by adapting and modifying instruments used in previous relevant studies, specifically those related to the effectiveness of learning communities, the use of digital education platforms, and teacher pedagogical competence. The adaptation process involved adjusting the indicators, context, and respondent characteristics to suit the conditions of elementary school teachers at the research location. Before use, the instrument underwent validity and reliability tests to ensure the appropriateness of the measurements. Data analysis was performed using SPSS 27. The analysis stages included prerequisite tests (normality, multicollinearity, heteroscedasticity, homogeneity, and linearity) and hypothesis testing using simple linear regression and multiple linear regression. Hypothesis testing was performed at a significance level of α = 0.05.

Results and Discussion

Descriptive analysis results show that teacher pedagogical competence is in the fairly high category with an average score of 144.89 (SD = 7.298). The effectiveness of the learning community was also in the fairly high category with an average score of 126.54 (SD = 9.950), while the utilization of the Rumah Pendidikan Platform was in the high category with an average score of 111.54 (SD = 9.614).

The prerequisite analysis test shows that the data meet statistical assumptions. The Kolmogorov–Smirnov normality test results show normally distributed residuals (Sig. > 0.05). The multicollinearity test produces a tolerance value of 0.980 and a VIF of 1.020, indicating no multicollinearity. In addition, the Glejser test showed no signs of heteroscedasticity (Sig. > 0.05), and the Levene's Test for homogeneity of variance showed that the data variance was homogeneous (Sig. > 0.05). The linearity test results show that the relationship between the effectiveness of the learning community and teacher pedagogical competence, as well as between the use of the Rumah Pendidikan Platform and teacher pedagogical competence, is linear. With all these assumptions fulfilled, the data is deemed suitable for regression analysis and further hypothesis testing.

The Effect of Learning Community Effectiveness on Teachers' Pedagogical Competence

The analysis of the strength of the relationship between the effectiveness of learning communities and teachers' pedagogical competence was conducted using Pearson Product Moment correlation test. The interpretation of the strength of the relationship refers to Sugiyono's (2016) criteria.

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Table 1. The Strength of the Relationship Between the Effectiveness of Learning Communities and Teachers' Pedagogical Competence

Correlations

		Effectiveness of learning communities	Teachers' pedagogical competence
Effectiveness of learning communities	Pearson Correlation	1	,820
	Sig. (2-tailed)		,000
	N	137	137
Teachers' pedagogical competence	Pearson Correlation	,820	1
	Sig. (2-tailed)	,000	
	N	137	137

The Pearson correlation test results show a value of r = 0.820, which indicates a very strong positive relationship between the effectiveness of the learning community and the pedagogical competence of teachers. This correlation value shows that the more effective the implementation of the learning community, the higher the pedagogical competence of elementary school teachers in Tanggungharjo District.

Table 2. The Effect of Learning Community Effectiveness on Teachers' Pedagogical Competence

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.845,372	1	1.845,372	34,218	,000[b]
	Residual	5.397,986	135	39,985		
	Total	7243,358	136			

The ANOVA test results show a calculated F value of 34.218 with a significance level of 0.000, which is smaller than α = 0.05 and greater than the table F value (3.90). Thus, the regression model is declared significant, indicating that the effectiveness of the learning community has a significant effect on teachers' pedagogical competence**.** The extent of the contribution of the effectiveness of learning communities to teachers' pedagogical competence can be seen in the following table:

Table 3. Summary Model of Regression of Learning Community Effectiveness on Pedagogical Competence

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,805[a]	,703	,710	4,324

An R Square value of 0,703 indicates that the effectiveness of the learning community contributes 70,3% to the variation in teachers' pedagogical competence. Meanwhile, 29.7% of the variation in teachers' pedagogical competence is influenced by factors outside the research model.

Table 4. The Contribution of Effective Learning Communities to Teachers' Pedagogical Competence

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	58,214	3,842		15,154	,000

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	Effectiveness of learning communities	0,486	0,083	,505	5,849	,000

The regression coefficient test results show a value of t = 5.849 with a significance level of 0.000 (< 0.05), indicating that the effectiveness of the learning community has a significant effect on teachers' pedagogical competence. The regression coefficient value of 0.486 shows that every one-unit increase in the effectiveness of the learning community increases teachers' pedagogical competence by 0.486 units. Thus, the alternative hypothesis (H_1) is accepted.

The Effect of Utilizing the Education Platform on the Pedagogical Competence of Public Elementary School Teachers

The analysis of the strength of the relationship utilizing the education platform on the pedagogical competence was conducted using Pearson Product Moment correlation test. The interpretation of the strength of the relationship refers to Sugiyono's (2016) criteria.

Table 5. The Strength of the Relationship Between the Use of the Rumah Pendidikan Platform and Teachers' Pedagogical Competence

Correlations

		Utilization of the Education Platform	Teachers' pedagogical competence
Utilization of the Education Platform	Pearson Correlation	1	,684
	Sig. (2-tailed)		,000
	N	137	137
Teachers' pedagogical competence	Pearson Correlation	,684	1
	Sig. (2-tailed)	,000	
	N	137	137

The results of the Pearson correlation test showed a correlation coefficient of 0.612, indicating a positive and strong relationship between the use of the Rumah Pendidikan Platform and teachers' pedagogical competence. The significance value of 0.000 (< 0.05) shows that the relationship is statistically significant, so that the higher the use of the platform, the higher the teachers' pedagogical competence.

Table 6. The Effect of Utilizing the Rumah Pendidikan Platform on Teachers' Pedagogical Competence

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3086,214	1	3086,214	45,782	,000[b]
	Residual	4147,144	135	30,831		
	Total	7243,358	136			

The ANOVA test results show an F value of 45.782 with a significance of 0.000 (< 0.05), which indicates that the regression model is statistically significant. The Sum of Squares Regression value of 3,086.214 shows the variation in pedagogical competence that can be explained by the model, while the Sum of Squares Residual of 4,157.144 comes from other factors outside the model, so the regression model is declared suitable for use.

Table 7. Contribution of the Utilization of the Education Platform to Teachers' Pedagogical Competence

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,673[a]	,469	,417	6,128

An R Square value of 0,469 indicates that the effectiveness of the learning community contributes 46,9% to the variation in teachers' pedagogical competence. Meanwhile, 53.1% of

the variation in teachers' pedagogical competence is influenced by factors outside the research model.

Table 8. Regression Coefficient of the Utilization of the Rumah Pendidikan Platform on Teachers' Pedagogical Competence

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	57,842	3,915		14,781	,000
	Utilization of the Education Platform	,354	,089	,368	3,978	,000

The Education Platform Utilization variable has a regression coefficient of 0.354 with a significance value of 0.000 (< 0.05), which means that the use of digital education platforms has a positive and significant effect on Pedagogical Competence.

The Effect of the Effectiveness of Learning Communities and the Use of the Rumah Pendidikan Platform on the Pedagogical Competence of Public Elementary School Teachers

The analysis of the strength of the relationship utilizing the Effectiveness of Learning Communities and the Use of the Rumah Pendidikan Platform on the Pedagogical Competence was conducted using Pearson Product Moment correlation test. The interpretation of the strength of the relationship refers to Sugiyono's (2016) criteria.

Table 9. The Strength of the Relationship between the Effectiveness of Learning Communities and the Use of the Rumah Pendidikan Platform on Teachers' Pedagogical Competence

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	Change Statistics F Change	Change Statistics df1	Change Statistics df2	Change Statistics Sig. F Change
1	,852[a]	,725	,716	4,132	,725	179,687	2	134	,000

The regression analysis results show an R value of 0.852, indicating a strong relationship between the use of the Rumah Pendidikan Platform and the effectiveness of learning communities with pedagogical competence. The R Square value of 0.725 shows that the two variables simultaneously explain 72.5% of the variation in pedagogical competence, with an Adjusted R Square of 0.416 and a Std. Error of the Estimate of 4.132. The F Change value of 179.687 with a significance of 0.000 (< 0.05) confirms that the regression model is significant and suitable for use.

Table 10. The Effect of Learning Community Effectiveness and Utilization of the Rumah Pendidikan Platform on Teachers' Pedagogical Competence

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3086,214	2	1543,107	49,687	,000[b]
	Residual	4157,144	134	31,016		
	Total	7243,358	136			

The ANOVA test results show an F value of 49.687 with a significance of 0.000 (< 0.05), which confirms that the use of the Rumah Pendidikan Platform and the effectiveness of the learning community simultaneously have a significant effect on pedagogical competence.

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The Sum of Squares Regression value of 3,086.214 shows the variation in pedagogical competence that can be explained by the model, while the rest is influenced by other factors, so the regression model is declared feasible.

Table 11. The Effect of Learning Community Effectiveness and Utilization of the Rumah Pendidikan Platform on Teachers' Pedagogical Competence

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,852[a]	,725	,417	4,132

SPSS 27

The results of multiple regression analysis show that the use of the Education Platform and the effectiveness of the learning community have a strong relationship with pedagogical competence (R = 0.852). These two variables simultaneously explain 72.5% of the variation in pedagogical competence, while the rest is influenced by other factors outside the model.

Table 12. Regression Coefficient of Learning Communities and Utilization of the Rumah Pendidikan Platform on Teachers' Pedagogical Competence

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	58,214	3,842		15,158	,000
	Effectiveness of learning communities	,486	,083	,505	5,855	,000
	Utilization of the Education Platform	,372	,091	,361	4,088	,000

The multiple linear regression results show a constant of 58.214. The effectiveness of the learning community has a positive and significant effect on pedagogical competence (β = 0.486; Sig. = 0.000) and has the most dominant influence (standardized β = 0.505). The use of the Rumah Pendidikan platform also has a positive and significant effect on pedagogical competence (β = 0.372; Sig. = 0.000), indicating that the simultaneous increase in these two variables contributes to the improvement of teachers' pedagogical competence.

Discussion

The findings of this study indicate that the effectiveness of learning communities and the use of the Rumah Pendidikan Platform have a significant effect on teachers' pedagogical competence, both partially and simultaneously. The regression results indicate that the Learning Community variable (β = 0.505) has a more dominant influence on pedagogical competence compared to the Digital Platform variable (β = 0.361). This finding suggests that social-professional interaction plays a stronger role than technology-based self-learning in improving teachers' pedagogical competence. One possible explanation is that primary school teachers tend to learn more effectively through direct dialogue, peer feedback, and contextual problem-solving rather than through independent platform-based learning.

From a theoretical perspective, this aligns with the social constructivist view of Lev Vygotsky, who emphasized that knowledge is constructed through social interaction and collaborative dialogue. Learning communities provide a zone of proximal development where teachers can discuss classroom challenges, reflect collectively, and receive immediate

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scaffolding from peers. Such interaction creates emotional support, professional trust, and contextual relevance, which may not always be replicated in digital environments.

In contrast, digital platform adoption is influenced by cognitive and psychological acceptance factors. According to the Technology Acceptance Model (TAM), teachers' engagement depends on perceived usefulness and perceived ease of use. If teachers perceive the platform as administratively demanding, technically complex, or disconnected from their classroom realities, their level of deep engagement may decline. Similarly, the Unified Theory of Acceptance and Use of Technology explains that performance expectancy, effort expectancy, social influence, and facilitating conditions determine technology usage behavior. In semi-rural contexts, limited infrastructure and digital literacy may reduce optimal utilization, explaining why its statistical contribution is lower than that of learning communities.

Furthermore, the finding that 33.6% of teachers remain in the low pedagogical competence category carries significant policy implications. This indicates that professional development initiatives have not yet reached all teachers evenly. If digital transformation policies rely excessively on platform-based approaches without strengthening collaborative professional culture, disparities may widen between digitally adaptive teachers and those who struggle with technological integration. For education policy in Indonesia, this implies the need to shift from a "platform-centric" approach to a "community-integrated digital ecosystem." Digital platforms should function as supportive tools embedded within Teacher Working Groups (KKG) and professional learning communities rather than as stand-alone reform instruments. Policies should prioritize sustained mentoring, contextual training, and infrastructure equity, particularly in semi-rural areas.

Thus, the dominance of learning communities over digital platforms does not negate the importance of technology. Instead, it highlights that pedagogical transformation is fundamentally social before it becomes technological. Effective teacher development requires synergy between collaborative interaction (as explained by Social Constructivism) and structured technological acceptance mechanisms (as described in TAM and UTAUT). Descriptively, the pedagogical competence of elementary school teachers in Tanggungharjo District is in the fairly high category, with an average score of 144.89, although 33.6% of teachers are still in the low to very low category. This condition indicates that improving pedagogical competence still requires strengthening through systematic support, particularly through learning communities and digital education platforms.

The regression analysis results show that the effectiveness of learning communities has a positive and significant effect on teachers' pedagogical competence, with a regression coefficient value of 0.486, a t-value of 5.849, and a significance of 0.000 (< 0.05). The correlation coefficient value of 0.820 indicates a very strong relationship, while the R Square value of 0.725 indicates that the effectiveness of learning communities can explain 75.5% of the variation in teachers' pedagogical competence. These findings reinforce the results of studies by Arifin and Hanif (2024) and Munandar (2024), which state that learning communities function as a sustainable professional learning ecosystem that encourages reflective practice, peer collaboration, and improvement in the quality of learning. Teachers' participation in learning communities enables pedagogical discussions, sharing of good practices, and collaborative problem-solving in learning, which ultimately has a direct impact on improving pedagogical competence. These results are also in line with Wulandari et al. (2025) and Faridah et al. (2025), who found that active involvement in learning communities contributes significantly to improving the pedagogical and professional competencies of elementary school teachers.

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The use of the Rumah Pendidikan Platform has also been shown to have a positive and significant effect on teachers' pedagogical competence. The regression results show a coefficient value of 0.354, with a t-value of 3.978 and a significance of 0.000 (< 0.05). The correlation coefficient value of 0.684 indicates a strong relationship between the use of digital platforms and pedagogical competence. Descriptively, the level of utilization of the Rumah Pendidikan Platform is in the high category, with an average value of 111.54, which indicates that most teachers have utilized the platform relatively optimally. These findings support the results of research by Hidayati et al. (2024) and Prasetyaningsih et al. (2024), which state that educational digital platforms play an important role in strengthening lesson planning, assessment implementation, and independent professional development for teachers. In line with the findings of Muttaqieni et al. (2025) and Pusdiklat GTK (2023), optimal utilization of digital platforms improves teachers' ability to adapt in implementing technology-based curricula and learning.

The results of multiple linear regression analysis show that the effectiveness of learning communities and the use of the Rumah Pendidikan Platform simultaneously have a significant effect on teachers' pedagogical competence, with a calculated F value of 179.687 and a significance of 0.000 (< 0.05). The R Square value of 0.703 indicates that these two variables together can explain 70,3% of the variation in teachers' pedagogical competence, while the remaining 29.7% is influenced by other factors outside the research model. The standardized beta value shows that the effectiveness of the learning community (β = 0.505) has a more dominant influence than the use of the Rumah Pendidikan Platform (β = 0.361). These findings reinforce the views of Nasution (2021) and Rahmani (2024), who emphasize that teacher competency development cannot be separated from the synergy between a collaborative professional culture and digital learning system support.

These findings expand on previous research by providing empirical evidence that strengthening effective learning communities, supported by the optimal use of the Rumah Pendidikan Platform, is a key strategy in improving the pedagogical competence of elementary school teachers. These results are highly relevant in the context of the digitization of education and the reform of teacher professional development in Indonesia, particularly in efforts to create teachers who are adaptive, reflective, and capable of implementing innovative learning in the classroom.

Conclusion

Based on the results of research and discussion, it can be concluded that the pedagogical competence of teachers is generally in the fairly high category, although there are still some teachers in the low and very low categories. This condition indicates that teachers' pedagogical competence is not yet fully uniform and still needs to be strengthened through continuous professional development programs. The effectiveness of learning communities has been proven to have a positive and significant influence on teachers' pedagogical competence 72,5%. The relationship between the two variables is very strong, and the effectiveness of learning communities contributes significantly to improving pedagogical competence. This shows that effective learning communities can encourage professional collaboration, learning reflection, and improvements in the quality of teachers' pedagogical practices.

The use of the Rumah Pendidikan platform also shows a positive and significant impact on teachers' pedagogical competencies 46,9%. The relatively high level of use of the platform indicates that teachers have utilized digital learning resources and services to support learning. The more optimal the use of the Rumah Pendidikan platform, the better the

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teachers' pedagogical competencies, particularly in planning, implementing, and innovating technology-based learning.

Simultaneously, the effectiveness of learning communities and the use of the Rumah Pendidikan Platform have a significant effect on teachers' pedagogical competence 70,3%. Together, these two variables can explain a large proportion of the variation in pedagogical competence. Of the two, the effectiveness of learning communities has a more dominant influence, but the use of digital platforms plays a supporting role in strengthening the improvement of pedagogical competence. Thus, it can be concluded that improving the pedagogical competence of elementary school teachers requires synergy between effective learning communities and optimal utilization of digital education platforms. These two aspects are important strategies in supporting teacher professional development in the era of educational transformation and digitalization.

Recommendation

(1) For Policy Makers: The Ministry of Education should transition from "platform-centric" to "community-centric" digital integration. Digital platforms should not be stand-alone tools but should be embedded as a medium for discussion within teacher working groups (KKG).
(2) For School Leadership: Principals should foster a "Culture of Error" where teachers feel safe to reflect on their pedagogical weaknesses within their communities without fear of administrative sanction.
(3) For Future Research: Future studies should employ longitudinal designs to observe the long-term impact of digital platform usage on actual student learning outcomes, rather than just teacher-perceived competence. Additionally, qualitative inquiries are needed to understand the socio-cultural barriers teachers face when adopting these digital tools in semi-rural areas.

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