



Community-Based Learning Strategies for Improving Pedagogical Competence of Elementary School Teachers in Rural Areas

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Abstract

Pedagogical competence is a critical determinant of instructional quality and student learning outcomes, yet standard professional development models often fail in rural areas due to infrastructure gaps. This study aims to analyze how community-based learning strategies function and adapt within these constraints to improve the pedagogical competence of elementary school teachers in rural contexts. This study employed a descriptive qualitative approach conducted in three state elementary schools in Simeulue Timur District (SDN 4, SDN 11, and SDN 12). Thirteen informants, comprising principals, learning community coordinators, teachers, and school supervisors, were purposively selected. Data were collected through in-depth interviews, classroom observations, and document analysis, and analyzed using the interactive model. The findings reveal that learning communities foster the development of pedagogical competence through collaborative planning, peer mentoring, reflective discussions, and classroom-based experimentation. In rural settings, these strategies are implemented adaptively, relying more on face-to-face interaction and practical experience rather than digital platforms. However, structural dysfunctions were identified, including inconsistent schedules, limited technological literacy, heavy administrative demands, and unequal teacher participation. This study highlights that community-based learning remains an effective model for teacher professional development in rural schools when designed to be participatory, reflective, and context-sensitive.

Keywords:

Community-Based Learning, Pedagogical Competence, Teacher Educational Strategy

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Abstrak

Kompetensi pedagogis merupakan faktor penentu utama kualitas pengajaran dan hasil belajar siswa, namun model pengembangan profesional standar seringkali tidak berhasil di daerah pedesaan akibat keterbatasan infrastruktur. Penelitian ini bertujuan untuk menganalisis bagaimana strategi pembelajaran berbasis komunitas berfungsi dan beradaptasi dalam keterbatasan tersebut guna meningkatkan kompetensi pedagogis guru sekolah dasar di konteks pedesaan. Penelitian ini menggunakan pendekatan kualitatif deskriptif yang dilakukan di tiga sekolah dasar negeri di Kabupaten Simeulue Timur (SDN 4, SDN 11, dan SDN 12). Tiga belas informan, yang terdiri dari kepala sekolah, koordinator komunitas belajar, guru, dan pengawas sekolah, dipilih secara purposif. Data dikumpulkan melalui wawancara mendalam, observasi kelas, dan analisis dokumen, serta dianalisis menggunakan model interaktif. Temuan menunjukkan bahwa komunitas belajar berkontribusi mengembangkan kompetensi pedagogis melalui perencanaan kolaboratif, bimbingan sesama guru, diskusi reflektif, dan eksperimen berbasis kelas. Di lingkungan pedesaan, strategi-strategi ini diterapkan secara adaptif, lebih mengandalkan interaksi tatap muka dan pengalaman praktis daripada platform digital. Namun, teridentifikasi disfungsi struktural, termasuk jadwal yang tidak konsisten, literasi teknologi yang terbatas, tuntutan administratif yang berat, dan partisipasi guru yang tidak merata. Penelitian ini menyoroti bahwa pembelajaran berbasis komunitas tetap menjadi model yang efektif untuk pengembangan profesional guru di sekolah-sekolah pedesaan, asalkan dirancang agar bersifat partisipatif, reflektif, dan peka terhadap konteks.

Kata Kunci:

Pembelajaran Berbasis Komunitas, Kompetensi Pedagogis, Strategi Pendidikan Guru

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INTRODUCTION

Teachers' pedagogical competencies are needed for effective learning. These competencies include the ability to understand students, design learning, implement, and evaluate (Afandi et al., 2023). In the Merdeka Curriculum policy, teachers act as facilitators. This role requires teachers to develop methods according to students' needs. However, in rural and remote areas, implementing conventional teacher professional development models faces fundamental constraints. Most training programs are designed for schools with adequate infrastructure, stable internet access, and flexible time allocation, assumptions that do not align with the realities of rural schools.

Preliminary school-level data and supervision reports in East Simeulue indicate that a significant proportion of elementary school teachers demonstrate limited mastery of lesson planning, student-centered instructional strategies, and formative assessment practices. At the same time, teachers experience heavy administrative workloads and limited access to formal training, leading to sporadic, fragmented professional learning. These conditions explain why standard, centrally designed training models are difficult to implement effectively in remote contexts and often fail to produce sustainable improvements in pedagogical competence. Consequently, teachers are compelled to rely on individual, self-directed learning, which tends to be inconsistent and insufficient to meet the demands of the Merdeka Curriculum. This gap highlights the need for a context-sensitive, collective, and school-based professional development strategy. Learning communities emerge as a relevant alternative, enabling teachers to collaboratively reflect, share practices, and continuously develop pedagogical competence, adaptively suited to rural conditions.

Previous research underscores that learning communities function as vital collaborative forums where educators collectively refine instructional practices through reflection, experience sharing, and structured stages such as lesson study and evaluation (Cojorn & Sonsupap, 2024; Tarnanen et al., 2024). Numerous studies confirm that these programs significantly

enhance pedagogical skills, professionalism, and students' critical thinking (Arifin & Hanif, 2024; Supardi & Herdiana, 2024). Furthermore, a robust professional learning community, when anchored in a consistent culture of sharing, directly improves teaching quality and character building (Admiraal et al., 2021; Hasbiyallah et al., 2023).

In the context of basic education, these communities serve as strategic platforms for teachers to navigate increasingly complex curriculum demands. However, teachers in remote areas face disproportionate obstacles, including unequal infrastructure, limited access to training, and overwhelming administrative burdens (Mncube et al., 2023). These barriers expose the failure of centralized, top-down professional development models to address real-world classroom challenges. While technology is often proposed to expand access to collaborative learning, its success remains highly dependent on school leadership support and technological readiness (Bentri et al., 2022; Supardi & Herdiana, 2024). Effective competency development ultimately requires a supportive school culture and managed teacher performance to ensure sustainable growth (Afandi et al., 2023; Ranta et al., 2023). Through systematic, collaborative discussions, learning communities can bridge this gap by strengthening teachers' competencies, even in the most challenging educational environments (Zamiri & Esmaeili, 2024).

Although previous studies have confirmed the effectiveness of learning communities, most of them focus on outcome measurement rather than exploring how teachers cope with limited resources and facilities in their daily practice. Therefore, this study positions learning communities not merely as an effective professional development model, but as a coping mechanism through which teachers collaboratively adapt, reflect, and innovate amid structural limitations. The urgency of this study lies in examining the contextual mechanisms of strengthening teacher competence through learning communities, particularly in environments where formal training and facilities are insufficient.

Access to technology remains a primary differentiating factor between developed and remote schools, particularly in online collaboration. While digital platforms can theoretically strengthen learning communities (Huda, 2024), implementation in rural areas like East Simeulue faces significant obstacles, including unstable internet access (Turnbull et al., 2021) and high administrative workloads that limit teachers' time. This creates a critical gap in the literature, as most studies focus on schools with adequate facilities (Selvaraj et al., 2021). Therefore, it is essential to evaluate learning community strategies according to local realities, positioning them as adaptive instruments suited to rural constraints.

To address this, the current study examines how strategies are planned, implemented, and evaluated through a collaboration theory and reflective practice lens. Evidence shows that collaborative forums like lesson study can improve critical thinking through shared experience (Cojorn & Sonsupap, 2024), provided they are anchored in a consistent culture of sharing (Admiraal et al., 2021). Leadership serves as the driver of this ecosystem (Selvaraj et al., 2021), while supervisors ensure continuous evaluation. Although national policy provides the legal basis, success is heavily dictated by technological readiness and systemic support (Turnbull et al., 2021). Through the synergy of all school elements, the learning community has the potential to operate effectively as an adaptive professional development model. Supporting this, previous research emphasizes that effectiveness is determined by topic relevance (Supardi & Herdiana, 2024) and institutionalized organizational support (Bellibaş et al., 2021). By analyzing these strategies, this study provides a concrete picture of teacher professional development in rural primary education.

Evaluation of previous studies highlights both opportunities and significant challenges in teacher professional development. While research emphasizes that the effectiveness of learning communities is determined by topic relevance (Supardi & Herdiana, 2024) and the strength of school leadership (Bellibaş et al., 2021), these findings are often limited to environments with adequate technological facilities (Huda, 2024).

International evidence further confirms that collaborative models like lesson study can effectively improve student competencies (Cojorn & Sonsupap, 2024), provided there is institutionalized organizational support within the school culture (Admiraal et al., 2021).

However, these established frameworks do not fully translate to the unique context of Indonesian primary education in remote regions like East Simeulue. In these areas, social conditions and facilities differ markedly, and teachers face severe challenges with time, technology, and basic resources (Selvaraj et al., 2021). This disparity necessitates an evaluation of learning community strategies that is grounded in local realities rather than idealized conditions. By examining these adaptive strategies, this study provides a concrete picture of how professional development persists under structural constraints, thereby enriching the primary education literature. Ultimately, this research positions the learning community not just as a standard program but as an essential adaptive instrument for sustainable education in marginalized contexts.

METHODS

Research Design

The research design employed in this study is a qualitative case study, selected to facilitate an in-depth and contextual exploration of a particular phenomenon in its real-life setting. This approach is particularly effective when the boundaries between the phenomenon and its context are not clearly defined, enabling a nuanced understanding of how teachers strengthen their pedagogical competence through learning communities amid limited resources and structural constraints. By focusing on a real-world context, this design enables the researchers to capture the intricate details related to learning community strategies in elementary schools. Furthermore, the case study approach allows for the capture of participants' perspectives, experiences, and coping mechanisms in dealing with professional challenges, providing a richer and more holistic understanding of the processes, interactions, and strategies that emerge within this specific educational environment.

Qualitative research was selected because its primary focus is to capture participants' perspectives, experiences, and coping mechanisms in dealing with professional challenges. Unlike a generic descriptive qualitative design, the case study approach enables the researchers to examine processes, interactions, and strategies that emerge within a specific educational context, thereby providing a richer and more holistic understanding of the phenomenon under investigation.

Research Flow & Procedure

To ensure methodological clarity, this study follows a systematic research process comprising several stages, which are visualized in a research flowchart. The research flow begins with problem identification and context analysis, followed by the formulation of research questions. Subsequently, data collection is conducted through in-depth interviews, observations, and document analysis within the learning community setting. The collected data are then analyzed thematically through coding, categorization, and interpretation. Finally, data validation is conducted through triangulation, leading to the formulation of conclusions and implications.

The research flowchart illustrates these sequential steps and ensures transparency and coherence throughout the research process.

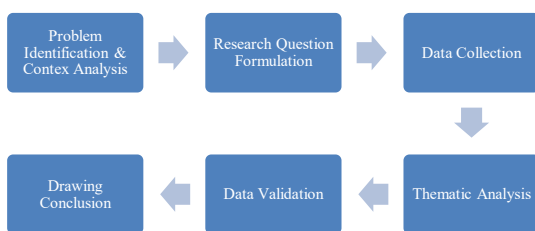


Figure 1. Research Flowchart

Research Site and Sampling

This research was conducted over a period of three months, from May 2025 to July 2025. The research sites consisted of three public elementary schools in the Simeulue Timur District: SDN 4, SDN 11, and SDN 12, which were selected using a purposive sampling technique. Purposive sampling was used to ensure the selected cases were

information-rich and relevant to the research objectives, particularly in exploring the mechanisms of strengthening teacher competence through learning communities.

The selection of SDN 4, SDN 11, and SDN 12 was based on several methodological criteria rather than solely on activity level. First, all three schools had institutionalized teacher learning community programs that had been running consistently for at least one academic year, allowing the researchers to observe established collaborative practices. Second, the schools represent variations in the number of teachers and organizational size, with small-, medium-, and relatively larger teaching staffs, enabling cross-case comparison. Third, differences in accessibility and infrastructure were considered, as the schools are located in areas with varying levels of geographical access and educational resources, which is relevant to understanding contextual constraints. Fourth, the schools serve student populations with diverse socio-economic backgrounds, providing a broader perspective on pedagogical challenges faced by teachers.

Research Participants

The research participants consisted of classroom teachers and school leaders who were directly involved in learning community activities. The teachers involved varied in terms of teaching experience, ranging from novice teachers with less than 5 years to senior teachers with more than 20 years of service. This variation was intentionally considered to capture diverse perspectives on professional learning, adaptation strategies, and collaborative practices. In addition, several participants held informal leadership roles within the learning community, such as coordinators or facilitators, which enriched the data regarding organizational dynamics and peer support mechanisms.

By incorporating participants with diverse professional backgrounds and contextual experiences, this study aims to provide a comprehensive and nuanced understanding of learning communities as a strategy for strengthening teacher competence.

The institutions involved include schools, particularly principals, teachers, and supervisors. The main figures of focus are

principals as policy makers, learning community leaders as motivators, teachers as activity implementers, and school supervisors as evaluators. The events observed include the planning, implementation, and evaluation of learning community strategies. Meanwhile, texts and documents such as meeting minutes, community work plans, and teaching modules are also included in the unit of analysis. With a diverse unit of analysis, this study can fully describe the dynamics of learning community strategies in elementary schools.

Data and Data Sources

The sources of information in this study consisted of key informants, written documents, and visual data. There were 13 research informants, consisting of three school principals, three learning community leaders, six teachers, and one school supervisor. Informants were selected purposively based on their active involvement in learning community activities. In addition to informants, written documents such as meeting agendas, activity reports, and teaching modules were sources of information that supported data triangulation. Visual data, including photos of learning community activities, field observation notes, and the use of simple digital media (e.g., WhatsApp groups), were also examined to strengthen the validity of the findings. By combining various sources of information, this study obtained a more comprehensive picture of how learning community strategies are designed, implemented, and evaluated in elementary schools.

Data Collection

Data collection techniques included observation, interviews, and documentation. Observations were made by directly participating in learning community activities, recording patterns of teacher interaction, and observing planning, discussion, and evaluation mechanisms. In-depth interviews were conducted using semi-structured guidelines to explore informants' experiences, perceptions, and views regarding learning community strategies. Documentation was used to supplement the information by examining meeting minutes, activity reports, and other

school documents. These three techniques were carried out triangulatively to ensure the data obtained were more valid and reliable. With this combination of methods, the researchers could ensure that the information obtained was not only drawn from informants' narratives but also from empirical evidence, including notes and field observations.

Data Analysis

Data analysis in this study followed the interactive model developed by Miles et al. (2014) in *Qualitative Data Analysis: A Methods Sourcebook*, which consists of three main stages: data reduction, data display, and conclusion drawing and verification. However, this process was operationalized through a systematic coding procedure to ensure analytical rigor.

In the data reduction stage, the researchers conducted an initial open coding process by carefully reading interview transcripts, observation notes, and relevant documents. Meaning units were identified and labeled with preliminary codes that reflected teachers' experiences, strategies, and challenges in learning community activities. These codes were then grouped through axial coding, in which relationships among codes were examined and organized into broader categories aligned with the research focus. Selective coding was subsequently applied to integrate the categories into key themes that explained the mechanisms underlying strengthening pedagogical competence.

In the data display stage, the reduced and coded data were organized into thematic matrices, descriptive narratives, and representative verbatim quotations to facilitate pattern recognition and cross-case comparison across the three schools. This stage enabled the researchers to examine similarities and differences in learning community practices across contexts. The final stage involved drawing conclusions and verification, which was carried out iteratively by constantly comparing emerging themes with the original data sources.

Trustworthiness and Validation Strategies

To enhance the trustworthiness of the findings, several validation strategies were

employed in addition to data triangulation. These included member checking, whereby preliminary interpretations were shared with selected participants to confirm accuracy, and peer debriefing, in which the analysis process and findings were discussed with fellow researchers to minimize subjective bias. An audit trail was also maintained by documenting coding decisions and analytical reflections, ensuring transparency and dependability of the research process.

Data validity is strengthened by triangulating sources and methods. With this procedure, the research can produce an in-depth, systematic analysis that is relevant to the objective of revealing the learning community's strategies for improving the pedagogical competence of elementary school teachers.

RESULTS AND DISCUSSION

Strategic Planning in Rural Schools

Planning a learning community is a crucial initial step that determines the direction and success of a program in improving teachers' pedagogical competencies. At this stage, schools and stakeholders formulate strategic steps tailored to teachers' needs, school characteristics, and educational policy requirements such as the Merdeka Curriculum. The planning process not only includes scheduling activities, determining materials, and assigning tasks, but also involves intensive coordination among the principal, the learning community chairperson, teachers, and school supervisors to ensure the program runs systematically and continuously. Thus, planning serves as a foundation that ensures learning community activities are carried out in a focused, effective manner and in accordance with the main objective: improving the pedagogical quality of elementary school teachers. The planning of the learning community can be marked by meetings between the principal and the teachers' council, and planning documents.

The uniqueness of this study lies in its focus on the planning stage of learning communities as a strategic and collaborative process that directly influences the improvement of teachers' pedagogical competence. This research highlights the

integration of policy demands, school context, and stakeholder coordination. This concept has not been sufficiently explored in previous studies that tend to emphasize implementation over planning.

Figure 2 shows a learning community planning meeting involving the principal and teachers at SDN 4 Simeulue Timur, demonstrating collaborative coordination in designing programs to improve teachers' pedagogical competencies.



Figure 2. Learning Community Planning Meeting at SDN 4 Simeulue Timur

Figure 3 reveal discussions between teachers at SDN 11 Simeulue Timur demonstrated participatory interactions in planning learning community activities that align with school needs.



Figure 3. Learning Community Planning Meeting at SDN 11 Simeulue Timur

Figure 4 demonstrates structured planning activities at SDN 12 Simeulue Timur, reflecting systematic preparation and alignment with educational policies to enhance teaching quality.



Figure 4. Learning Community Planning Meeting at SDN 12 Simeulue Timur

Beyond the face-to-face interaction, these strategic designs are systematically documented within the educational unit's annual work plan, ensuring accountability and program sustainability at the school level. Figure 5 shows documents from the learning community planning session at three elementary schools in Simeulue Timur, illustrating proper design in competency improvement programs.

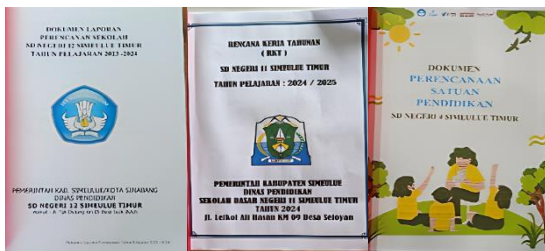


Figure 5. Learning Community Planning Documents

Figure 1-5 above shows that the three elementary schools, namely SDN 4, SDN 11, and SDN 12 Simeulue Timur, plan their learning communities through regular meetings led by the principal. Interviews with teachers and learning community leaders confirmed that the agenda was based on real problems they faced in the classroom. Observations showed that meetings were held after school hours, with teachers jointly determining topics, dividing roles, and setting schedules. It can be concluded that learning community planning is a crucial first step in determining the success of the strategy. One teacher said: “We usually discuss topics related to teaching difficulties, such as creating teaching modules or strategies for teaching slow learners” (EN, SDN 4 teacher, 45 years

old). This fact confirms that needs-based planning is more relevant than general planning.

The principal also mentioned that planning was not merely a formality, but was aimed at solving learning problems. The principal of SDN 11 emphasized that every learning community agenda must have practical objectives that can be directly applied in the classroom. The interview description shows that activity plans were usually recorded in simple minutes, which were then used as guidelines for the next meeting. From this pattern, it appears that learning community planning is adaptive, in accordance with the capacity and needs of teachers in each school. This shows that even under limited conditions, the planning process can still provide clear direction for implementing activities.

The description of the interview results with the learning community chairperson reveals that teachers are actively involved in planning, which helps them feel a sense of ownership over the activities. Statements from other informants show that this involvement increases their sense of responsibility. The conclusion from these findings is that participatory planning can strengthen a sense of ownership while increasing the effectiveness of strategies. A learning community leader stated: “We try to get all teachers to contribute ideas, so that these activities feel like they belong to everyone” (DW, learning community leader at SDN 11, 50 years old). This fact reinforces the argument that participation from the planning stage is essential to successful implementation.

Implementation and Documentation of Learning Communities

The implementation of the learning community is a core stage that demonstrates how the plans drawn up are realized in practice at school. At this stage, all members of the community, from teachers and principals to the chair of the learning community, play an active role in carrying out activities according to the planned schedule, materials, and strategies. Implementation takes the form of not only face-to-face meetings, but also discussions via digital media, collaboration in developing teaching tools, and sharing experiences and

best practices among teachers. The dynamics at this stage of implementation show the extent to which the commitment, coordination, and involvement of all parties can support the achievement of the learning community's goals, particularly in improving teachers' pedagogical competencies.

Figure 6 shows the implementation of learning community activities at SDN 4 Simeulue Timur, which illustrates teachers' collaborative involvement in professional discussions aimed at improving pedagogical practices and teaching quality.



Figure 6. Learning Community Implementation at SDN 4 Simeulue Timur

Figure 7 illustrates the practice of learning communities at SDN 11 Simeulue Timur, showing the active participation of teachers in structured activities, which reflects continuous professional development and collaboration among teachers.



Figure 7. Learning Community Implementation at SDN 11 Simeulue Timur

Figure 8 shows that the implementation of learning community activities at SDN 12 Simeulue Timur involves coordinated efforts among teachers to improve teaching

competencies through collaborative learning and reflective practice.



Figure 8. Learning Community Implementation at SDN 12 Simeulue Timur

Figure 6-8 in the implementation section above provides an overview of the learning community activities that took place at SD 4, SD 11, and SD 12 Simeulue Timur, which were carried out according to a predetermined schedule. The research data show that the implementation of learning communities is not limited to a single model of activity but is carried out using various strategies, such as group discussions, sharing good practices, and simple lesson studies. The results of teacher interviews show that activities are carried out regularly, either weekly or monthly, depending on the school's agreement. Similarly, observations show that the atmosphere of the meetings is relaxed yet serious, with teachers taking turns presenting their teaching experiences.

The principal emphasized that the activities were aimed at producing concrete changes in the classroom, not just routine meetings. Meeting documents showed that each implementation session always ended with follow-up notes; for example, teachers tried certain strategies in the classroom and reported the results at the next meeting. The interpretation stated that sustainability was the key to effective implementation. This also showed that the learning community was not just a discussion space, but a forum for continuous professional development.

The practical implementation of these strategies is not only observable through teacher interactions but is also rigorously recorded in formal administrative artifacts, ensuring transparency and accountability

within the school's professional development framework.

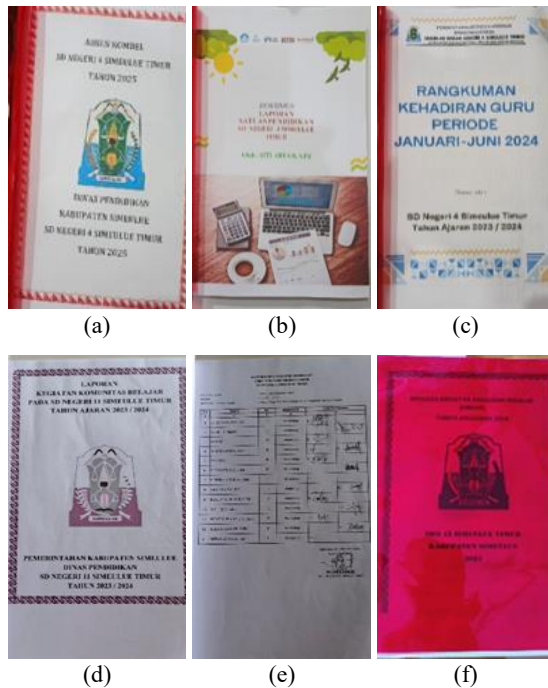


Figure 9. Learning Community Administrative Documents

Figure 9a, 9b, and 9c provide examples of a learning community document at SDN 4 Simeulue Timur, which describes the structured administrative records used to support the planning, implementation, and evaluation of collaborative activities between teachers. While Figures 9d and 9e document the learning community at SDN 11 Simeulue Timur, the systematic recording of activities reflects organized management and accountability in professional development practices. In addition, Figure 9f showcases a formal document from SDN 12 Simeulue Timur showing the use of formal documentation to ensure the sustainability and effectiveness of the teacher collaboration program.

Figure 9 above illustrates that each learning community has documents, including planning, implementation, and evaluation documents submitted to the principal, which also serve as useful school documents for school administration. From the document review, the researchers found that the implementation of the learning community has been carried out well and has also contributed

to improving teacher competence, especially in pedagogical competence. The researchers also understands that there are still many shortcomings in the preparation of these documents, both in language and in the manner of presenting the report.

Furthermore, the interview with the school supervisor indicates that the implementation of the learning community is regularly monitored to ensure consistency. The school supervisor emphasized the importance of teacher follow-up after the activity. The result of this finding is that the success of the implementation depends on the extent to which teachers internalize the discussion's outcomes into actual learning. One supervisor said: "According to my observations, after participating in the learning community activities, teachers became more prepared to teach because there was clear reflection and follow-up" (RS, school supervisor, 58 years old). This fact confirms that consistent implementation has a direct impact on improving teachers' pedagogical competence.

Supporting Factor

Based on interviews with 13 informants across the three schools, two main clusters of supporting factors were identified: internal teacher motivation and institutional support. The study found that teachers' intrinsic motivation is the primary driver of the program's success. As one principal highlighted, "the most important factor contributing to the success of learning communities is teachers' enthusiasm and commitment to continuously improving their competencies" (SA). This suggests that intrinsic motivation serves as the foundation for active participation and continued professional growth.

Furthermore, school support and a collaborative culture among teachers significantly strengthened the implementation process. Providing dedicated time, space, and opportunities for discussion fostered a conducive environment for knowledge sharing and reflective practice. Another informant emphasized that "teachers' enthusiasm for continuous learning and sharing experiences, supported by the provision of time and space, played a crucial role in creating a conducive learning atmosphere" (SY). These findings

demonstrate that effective leadership and supportive school policies are crucial in facilitating collaboration and sustaining learning community activities. Overall, the synergy between individual motivation, institutional support, and collaborative practices enhances the effectiveness of learning communities in improving teachers' pedagogical competence.

Interviews with school principals indicate that the main factor supporting the implementation of learning communities in elementary schools is teachers' enthusiasm and motivation to improve their pedagogical competencies continuously. The principals of SDN 4, SDN 11, and SDN 12 agreed that teacher commitment is the greatest asset in maintaining the continuity of activities, which is reinforced by institutional support in the form of special time, meeting rooms, and simple facilities such as teaching materials and access to basic technology. In addition, teacher cooperation is considered crucial, as it creates a conducive atmosphere for discussion, experience sharing, and joint reflection. The role of the principal is demonstrated through providing motivation, direction, and facilitation of teachers' needs, which makes the learning community more organized and sustainable. Thus, the synergy between teachers' personal motivation and the school's structural support is key to the successful implementation of the learning community.

Beyond individual motivation, institutional support and a collaborative culture significantly strengthen the process. Principals at SDN 4, 11, and 12 agreed that teacher commitment is the greatest asset, which is then reinforced by providing dedicated time, meeting rooms, and funding from the School Operational Assistance (BOS) program. One principal said: "We try to facilitate so that teachers are not overburdened, and we even use our BOS budget to support the learning community" (NH, principal of SDN 12, 48 years old). This fact confirms that the combination of teacher motivation and institutional support creates an ecosystem conducive to the development of pedagogical competence.

Voices of the Community Leaders

Interview results indicate that the successful implementation of a learning community is heavily influenced by factors such as togetherness, commitment, and institutional support from the school. A sense of togetherness among teachers is a dominant factor encouraging active participation in every activity. This is reflected in the statement of one informant, who stated that "the spirit of togetherness among teachers... makes activities more lively and beneficial" (MN). This statement demonstrates that a sense of ownership and shared responsibility are the main foundations for building an effective learning community.

Furthermore, a shared commitment and clear goals are also crucial factors in supporting the sustainability of activities. Another informant emphasized that "there is a shared commitment among teachers...and they have clear goals, so that each meeting has a clear direction and benefits" (DW). This demonstrates that a learning community depends not only on participation but also on a clear direction of activities, which can have a tangible impact on improving teacher competency.

Complementing the institutional support, the heads of the learning communities at the three schools emphasized that a spirit of togetherness and shared commitment are the actual foundations of their daily operations. A sense of collective ownership makes the activities more lively and impactful. Furthermore, having clear, shared goals ensures that every session remains focused on improving pedagogical competence. This synergy among fluid communication, peer support, and clear objectives maintains the program's long-term sustainability.

Voices of the Teachers

Based on interview results across three schools, the main supporting factors for learning communities are grouped into several key themes: teacher commitment, principal support, openness, and thematic relevance. Teachers indicated that success is heavily influenced by their willingness to learn and share experiences. One informant emphasized that "the main factor supporting the

effectiveness of the learning community is the commitment of teachers to share," highlighting active participation as a key to success and fostering a sense of program ownership.

Furthermore, the principal's support is crucial for sustainability. This leadership goes beyond administration to include providing the necessary time and space for professional development. As one informant stated, "support from the principal, who always provides space and time for activities, is very important," demonstrating how leadership creates a conducive environment for growth.

Another contributing factor is the openness among members in sharing good practices. A comfortable, non-hesitant environment allows for more reflective discussions. One teacher noted, "We can share experiences without hesitation," proving that psychological comfort improves the quality of shared learning.

The relevance of meeting topics to real classroom needs also ensures that the learning community remains applicable and impactful. This relevance, combined with a clear division of roles, ensures smooth and systematic meetings. Consequently, teacher motivation emerges as a primary pillar of success. Observations confirmed that teachers enthusiastically provide feedback and implement new ideas despite facing various limitations.

This intrinsic motivation serves as a positive energy that strengthens long-term sustainability and boosts individual teacher confidence. As RH, a 54-year-old teacher at SDN 12, expressed: "I feel more confident after joining the learning community because I received a lot of feedback that was relevant to my classroom situation". Ultimately, the synergy between internal teacher motivation, institutional facilitation, and topical relevance forms the successful ecosystem of these learning communities.

Voices of the School Supervisors

Interviews with school supervisors show that the success of learning community implementation is largely determined by the synergy between teachers' and school principals' commitments. When both parties share the same enthusiasm, learning community activities can run more smoothly

and sustainably. In addition, support from the education office and school supervisors is a strategic factor because it provides clear direction, legitimacy, and policy support, thereby strengthening the program's foundation. Supporting facilities such as meeting rooms, the availability of teaching materials, and the allocation of special time are also considered important to ensure that the learning community does not become just routine but actually provides real benefits for improving teachers' pedagogical competence. Thus, cross-role collaboration among teachers, principals, supervisors, and education agencies, as well as support in terms of facilities and policies, is key to maintaining the effectiveness and sustainability of learning communities in elementary schools.

Barrier Factors

The findings reveal that barriers to implementing learning communities in elementary schools are multidimensional, encompassing structural, technological, and cultural factors. The most dominant obstacle identified is time constraints, primarily due to heavy teaching loads and administrative responsibilities. As one principal stated, "The most common obstacle is time constraints, as teachers already have many routine tasks, both administrative and teaching" (SA). This is further emphasized by a learning community leader who noted that finding free time is difficult given the existing workload (MN).

Beyond time constraints, limited technological competence, and facility support, these factors significantly hinder effectiveness. Some teachers remain unfamiliar with digital tools for knowledge sharing, a situation exacerbated by inadequate infrastructure, such as unstable internet and a lack of equipment. This is reflected in SA's observation that "some teachers are not yet accustomed to using technology to support discussions," and reinforced by MN's note on the limited availability of projectors and stable access.

Furthermore, cultural and psychological challenges manifest as variations in participation and confidence. Passive engagement often stems from a lack of self-assurance in sharing ideas. As one teacher explained, "some teachers lack confidence in

speaking, so that not all of the information they have can be shared” (EV). This is supported by the supervisor’s observation (RS) regarding a lack of motivation to try new things.

Overall, these structural, technological, and cultural barriers are interconnected. Addressing these simultaneously through adaptive interventions is crucial; otherwise, these obstacles will continue to hinder the primary goal of improving teachers’ pedagogical competencies.

Discussion

The findings of this study indicate that learning communities function as a strategic mechanism for strengthening elementary school teachers’ pedagogical competence. Rather than merely reiterating empirical outcomes, these findings can be critically interpreted through the lens of Wenger’s Communities of Practice (CoP) theory, which emphasizes three core elements: domain, community, and practice.

In the context of the studied schools in East Simeulue, the learning communities demonstrate a partially formed domain, namely a shared concern for improving pedagogical competence in response to the demands of the Merdeka Curriculum. Teachers collectively recognize the importance of improving instructional quality, lesson planning, and classroom strategies. However, this shared domain is not always fully internalized by all members, as participation remains uneven and sometimes compliance-based, indicating that the domain is still partly shaped by administrative expectations rather than intrinsic professional commitment.

From the perspective of the community element, this study reveals a relatively strong sense of social cohesion among teachers. This cohesion is closely linked to the local culture of Simeulue, which is characterized by values of mutual cooperation (*gotong royong*), togetherness, and collective responsibility. These local wisdom values strengthen interpersonal trust and encourage teachers to support one another, particularly in rural settings where professional isolation is common. This is consistent with Cojorn and Sonsupap (2024), who found that collective culture and social harmony play a significant

role in sustaining teacher collaboration within Southeast Asian educational contexts. Compared to urban teachers, who often experience more competitive and individualistic professional cultures, teachers in Simeulue tend to rely more on collegial solidarity, which reinforces the social foundation of the learning community. This finding extends Wenger’s concept by demonstrating how local cultural capital can intensify the community dimension of a Community of Practice.

However, the practice element, the shared repertoire of routines, tools, and pedagogical innovations, remains unevenly developed. While some teachers actively engage in reflective discussions, lesson experimentation, and feedback cycles, others participate passively or only fulfill formal obligations. This indicates that the learning communities in this context risk functioning as semi-administrative groupings rather than fully mature Communities of Practice. Wenger (1999) in *Communities of Practice: Learning, Meaning, and Identity*, argues that a true CoP emerges when members continuously negotiate meaning through shared practice; in this study, such negotiation is often disrupted by heavy administrative workloads, inconsistent scheduling, and limited follow-up in classrooms.

The identified dysfunctions, such as irregular meetings, limited integration of digital tools, and inconsistent outcomes, can be interpreted as structural constraints that hinder the transformation of these groups into mature Communities of Practice. This condition resonates with Murphy (2015), who argues that entrenched cultural and structural barriers within educational administration often stifle deep professional collaboration. Furthermore, the dominance of senior teachers and hierarchical relations in these schools reflects a bureaucratic culture that restricts the 'equal participation' necessary for success, as highlighted by Avidov-Ungar et al. (2021). Without sustained organizational support and a shift toward more horizontal interactions, these communities risk remaining as formal administrative entities, failing to foster the continuous negotiation of meaning essential for professional growth (Hu & Endozo, 2024). These conditions ultimately weaken the

practice dimension and limit the circulation of innovative pedagogical knowledge

Leadership plays a decisive role in mediating these tensions. Principals act as institutional brokers who legitimize the learning community by allocating time, space, and resources, a role consistent with Wenger's notion of boundary support within a CoP. This finding aligns with Tarnanen (2023), who emphasizes that teachers' professional agency in a learning community thrives when supported by a leadership structure that encourages shared responsibility.

Yet the dependence on individual leadership figures exposes the community's fragility, as activities tend to weaken when leadership changes. This finding suggests that the learning community has not yet been fully institutionalized as a self-sustaining professional culture, but continues to operate within a top-down structural framework (Haider et al., 2025).

Overall, this study contributes theoretically by positioning learning communities not simply as effective professional development programs but as emerging Communities of Practice shaped by structural constraints and local cultural strengths. The novelty of this research lies in demonstrating that, in rural contexts such as Simeulue, strong social cohesion rooted in local wisdom can compensate for limited resources but cannot fully overcome systemic barriers related to policy, workload, and infrastructure. Therefore, learning communities in this setting function as adaptive and resilient professional spaces, but their sustainability depends on policy reforms that balance administrative demands with teachers' professional learning needs.

Synthesis of previous studies consistently demonstrates that learning communities are an effective mechanism for improving teachers' pedagogical competence and professionalism (Arifin & Hanif, 2024; Supardi & Herdiana, 2024), while also increasing teacher confidence through shared practices (Harlita & Ramadan, 2024; Bukit & Tarigan, 2022). However, while earlier works often emphasize idealized or well-supported programs in urban settings (Graves et al., 2021), this study offers a distinct novelty by shifting the focus to the resilience of rural

teacher networks. It extends Wenger's Communities of Practice framework by demonstrating how local social capital, such as gotong royong and collegial solidarity, can compensate for limited access to technology and heavy administrative burdens. Thus, this research enriches the discourse on context-sensitive professional development, proving that growth can emerge from adaptive, school-based initiatives even when formal institutional support is limited.

Unlike previous studies that tend to emphasize ideal or well-supported learning communities in urban or well-resourced settings (Arifin & Hanif, 2024; Supardi & Herdiana, 2024), this research highlights adaptive mechanisms and informal practices that sustain professional learning under severely constrained conditions. By contextualizing the effectiveness of learning communities in rural elementary schools with limited infrastructure and technological access, this study enriches the discourse on context-sensitive teacher professional development. This comparison underscores that professional growth does not depend solely on formal training programs but can also come from adaptive, school-based initiatives that leverage local social capital.

From a theoretical perspective, this study contributes by identifying structural and cultural conditions that mediate the formation of domains, communities, and practices within learning communities, showing that strong community bonds do not automatically translate into shared professional practice without supportive organizational structures. This finding refines existing assumptions that learning communities are universally effective, highlighting the importance of contextual and cultural factors.

In practice, this study provides context-sensitive recommendations for schools in remote areas, including formalizing learning community schedules, reducing administrative burdens, empowering peer facilitators, and integrating low-cost, accessible digital tools to sustain reflective practice. At the policy level, the implications suggest that education authorities should allocate protected time for teacher collaboration, provide incentives for community-based professional learning, and design professional development models that

recognize local wisdom and contextual constraints. By bridging theory, empirical evidence, and practical implications, this study positions learning communities as a viable and adaptive strategy for strengthening teachers' pedagogical competence in marginalized and rural educational settings.

CONCLUSION

This study confirms that learning communities serve as a strategic and resilient mechanism for enhancing elementary school teachers' pedagogical competence, particularly in rural and resource-limited contexts. The findings demonstrate that participatory planning, reflection-based implementation, and institutional support create a collaborative space where teachers can collectively address classroom challenges. A key insight from this research is that strong social cohesion, rooted in local wisdom and collegial solidarity, can partially compensate for structural limitations and inadequate infrastructure. This indicates that professional development is not solely dependent on formal, top-down training but can thrive through adaptive, school-based initiatives. To ensure the sustainability of these communities, several policy and practical interventions are recommended. Education authorities must formally allocate protected time within teachers' workloads to ensure that collaborative learning is recognized as a core professional duty rather than a voluntary task. Furthermore, school operational funding should be flexibly managed to support essential community needs, including basic digital tools and internet access. Leadership remains a decisive factor; therefore, principals should institutionalize these communities through formal school policies to ensure continuity beyond individual leadership terms. While this study provides deep contextual insights, its focus on a limited number of schools in a specific rural region suggests that future research should employ mixed-method approaches or broader geographic scales to strengthen the generalizability of these findings. Ultimately, when integrated with clear regulations and supportive organizational structures, learning communities offer a scalable model for improving the quality of education in marginalized settings.

REFERENCES

- Admiraal, W., Schenke, W., de Jong, L., Emmelot, Y., & Sligte, H. (2021). Schools as professional learning communities: what can schools do to support professional development of their teachers? *Professional Development in Education*, 47(4), 684–698.
- Afandi, M., Wahyuningsih, S., Yustiana, S., Kusumadewi, R. F., & Rachmadtullah, R. (2023). Correlation of work discipline and pedagogical competence to teaching performance in elementary teacher. *International Journal of Instruction*, 16(4), 189–208.
- Arifin, J., & Hanif, M. (2024). Management of school learning community programs to improve teachers' pedagogical competence. *Ideguru: Jurnal Karya Ilmiah Guru*, 9(3), 1421–1432.
- Avidov-Ungar, O., Guberman, A., Dahan, O., & Serlin, R. (2021). Professional communities of teacher educators: the characteristics that promote their success. *International Journal of Leadership in Education*, 24(4), 491–512.
- Bellibaş, M. Ş., Gümüş, S., & Liu, Y. (2021). Does school leadership matter for teachers' classroom practice? The influence of instructional leadership and distributed leadership on instructional quality. *School Effectiveness and School Improvement*, 32(3), 387–412.
- Bentri, A., Hidayati, A., & Kristiawan, M. (2022). Factors supporting digital pedagogical competence of primary education teachers in Indonesia. *Frontiers in Education*, 7, 929191.
- Bukit, S., & Tarigan, E. (2022). Kompetensi pedagogik guru dalam membentuk karakter peserta didik sekolah dasar. *Widya Genitri: Jurnal Ilmiah Pendidikan, Agama dan Kebudayaan Hindu*, 13(2), 110–120.

- Cojorn, K., & Sonsupap, K. (2024). Impact of community of practice and lesson study on fostering the student thinking competency. *International Journal of Education and Literacy Studies*, 12(1), 284–294.
- Graves, J. M., Abshire, D. A., Amiri, S., & Mackelprang, J. L. (2021). Disparities in technology and broadband internet access across rurality: Implications for health and education. *Family & Community Health*, 44(4), 257–265.
- Haider, S., Moin, L., & Haider, H. (2025). Sustaining professional competence in resource-constrained contexts: perspectives of university teachers in Balochistan. *Journal of Political Stability Archive*, 3(4), 612–628.
- Harlita, I., & Ramadan, Z. H. (2024). Peran komunitas belajar di sekolah dasar dalam mengembangkan kompetensi guru. *Didaktika: Jurnal Kependidikan*, 13(3), 2907–2920.
- Hasbiyallah, H., Munadi, M., & Nurulhaq, D. (2023). Character education model for high school students during the pandemic in terms of pedagogic competence and teacher personality. *International Journal of Instruction*, 16(2), 1077–1094.
- Huda, M. (2024). Between accessibility and adaptability of digital platform: investigating learners' perspectives on digital learning infrastructure. *Higher Education, Skills and Work-Based Learning*, 14(1), 1–21.
- Hu, G., & Endozo, A. N. (2024). Exploring the role of communities of practice in enhancing professional development of physical education teachers: A literature review. *International Journal of Education and Humanities*, 16(3), 126–130.
- Mncube, D. W., Ajani, O. A., Ngema, T., & Mkhasibe, R. G. (2023). Exploring the problems of limited school resources in rural schools and curriculum management. *UMT Education Review*, 6(2), 1–31.
- Murphy, J. (2015). Creating communities of professionalism: Addressing cultural and structural barriers. *Journal of Educational Administration*, 53(2), 154–176.
- Ranta, S., Kangas, J., Harju-Luukkainen, H., Ukkonen-Mikkola, T., Neitola, M., Kinos, J., Sajaniemi, N., & Kuusisto, A. (2023). Teachers' pedagogical competence in Finnish early childhood education—A narrative literature review. *Education Sciences*, 13(8), 791.
- Selvaraj, A., Radhin, V., Benson, N., & Mathew, A. J. (2021). Effect of pandemic based online education on teaching and learning system. *International Journal of Educational Development*, 85, 102444.
- Supardi, U. S., & Herdiana, H. (2024). Efektivitas komunitas belajar dalam meningkatkan kualitas guru di sekolah. *Algoritma: Jurnal Matematika, Ilmu Pengetahuan Alam, Kebumihan dan Angkasa*, 2(6), 146–153.
- Tarnanen, M., Kostiainen, E., Kaukonen, V., Martin, A., & Toikka, T. (2024). Towards a learning community: Understanding teachers' mental models to support their professional development and learning. *Professional Development in Education*, 50(5), 1019–1033.
- Turnbull, D., Chugh, R., & Luck, J. (2021). Transitioning to e-learning during the COVID-19 pandemic: How have higher education institutions responded to the challenge? *Education and Information Technologies*, 26(5), 6401–6419.
- Zamiri, M., & Esmaeili, A. (2024). Strategies, methods, and supports for developing skills within learning communities: A systematic review of the literature. *Administrative Sciences*, 14(9), 231.