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Uncovering the Role of Professional Learning Community in Driving Teacher Innovation and Competency

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Abstract
This study aims to examine the impact of teacher participation in Professional Learning Communities (PLCs) on the enhancement of teacher competencies in UPTD SMAN 2 Polewali. A quantitative approach was employed, using a Likert-scale questionnaire to measure the level of teacher engagement in PLCs and their professional competencies, including pedagogical, professional, social, and personal aspects. The findings reveal that active participation in PLCs significantly improves teachers' ability to adopt innovative and effective teaching strategies, manage classrooms, and engage in reflective practices. Moreover, PLCs provide a collaborative space for teachers to share experiences, address challenges, and develop joint solutions, ultimately fostering a culture of continuous improvement in educational quality. Despite these promising results, this study is limited to a specific local context, and the use of quantitative methods restricts the exploration of in-depth interactions within PLCs. Future research should incorporate mixed methods and expand to diverse regions to achieve broader generalizability and deeper insights.
Keywords: Educational Innovation; Professional Learning Communities; Teacher Competency Development

Introduction

Teacher competency development plays a pivotal role in improving the quality of education in Indonesia. One prominent approach gaining traction is the implementation of Professional Learning Communities (PLCs). PLCs offer educators a platform to collaborate, share knowledge, and support each other in professional growth. The adoption of PLCs is expected to foster innovation and enhance teaching competencies, which ultimately contribute to improved student learning outcomes. Previous studies have highlighted the significance of PLCs in

encouraging the use of innovative and effective teaching methods (Hord, 1997; Vescio, Ross, & Adams, 2008). Understanding the role of PLCs is therefore essential to developing effective educational strategies.

Over the past five years, various studies have examined the impact of PLCs on teacher competencies. Doğan, et al. (2017) demonstrated that participation in PLCs improves pedagogical skills and enhances teaching practices. Similarly, Garet et al. (2020) found that involvement in PLCs positively impacts classroom management and the use of technology in teaching. However, these studies primarily focus on general contexts, with limited exploration of PLCs in specific educational environments.

Additionally, Hargreaves and Fullan (2012) emphasize the importance of collaboration in professional development but lack an in-depth analysis of local contexts, particularly in Indonesia. Research by Li et al. (2021) revealed that while PLCs offer notable benefits, the level of impact varies among teachers. This variability underscores the need for localized studies to examine how PLCs affect teacher competencies within specific cultural and institutional settings.

Despite the growing body of research, a significant gap exists in understanding how PLCs impact teacher competencies in Indonesia's diverse educational settings. While global studies highlight the benefits of PLCs, they do not adequately address the challenges and nuances of implementing PLCs in Indonesia. Furthermore, local studies are sparse and often fail to capture the varying experiences of teachers participating in PLCs. This limited understanding calls for focused research to explore how contextual factors influence the effectiveness of PLCs and the extent to which they support teacher development.

This research aims to examine the impact of teacher participation in Professional Learning Communities (PLCs) on their professional competencies, including pedagogical skills, classroom management, and innovative teaching methods. It seeks to provide empirical evidence on the effectiveness of PLCs in fostering collaborative environments that support sustainable professional development, while also analyzing the contextual factors that influence teacher participation and the overall effectiveness of PLCs in improving teaching quality.

This research adopts a qualitative approach to explore teachers' experiences within PLCs, providing in-depth insights into their role in enhancing professional competencies. By focusing on the local context, the study aims to uncover specific factors that influence the success of PLCs, offering tailored recommendations for optimizing their implementation in Indonesia. The findings will contribute to a more nuanced understanding of PLCs and their potential to drive educational improvements in the region.

Method

This study employs a quantitative approach to analyze the influence of teachers' participation in Professional Learning Communities (PLCs) on improving teacher competencies at UPTD SMAN 2 Polewali. Data will be collected through questionnaires specifically designed to measure the level of teacher involvement in

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PLCs and their competencies. Using descriptive analysis methods, the study aims to provide a clear understanding of the relationship between these two variables. The data will be analyzed using standardized statistical software to ensure the validity and reliability of the findings, offering insights into the impact of PLCs within the local educational context.

The study population consists of 50 teachers teaching at UPTD SMAN 2 Polewali. Respondents were selected purposely, including those actively participating in PLC activities at the school. By involving 50 teachers, the research seeks to obtain a representative sample of the teacher population at the school and to gain a deeper understanding of their experiences and perspectives on participating in PLCs. Each respondent is expected to provide relevant information about their teaching practices and innovations(Nguyen et al., 2023), as well as how their involvement in professional communities impacts their competencies as educators (Peters, 2013). By selecting this population, the research aims to make a significant contribution to developing an effective community-based learning model in educational settings.

The instruments used in this study include a Likert-scale questionnaire designed to measure two main variables: teacher participation in Professional Learning Communities (PLCs) and their level of competencies. The questionnaire consists of several items covering various aspects, such as the frequency of participation in PLC activities, collaboration among teachers, and the application of innovations in teaching (Wood & Alshammari, 2021).

The advantage of using a Likert-scale questionnaire is its ability to provide quantitative data that can be statistically analyzed, facilitating conclusions about the relationship between the studied variables (Sullivan & Artino, 2013). Furthermore, the instrument will be tested for validity and reliability before implementation to ensure that the collected data accurately reflects the conditions in the field.(Kimberlin & Winterstein, 2008)

Data collection procedures in this study follow several systematic steps. First, the researcher will obtain permission from the school authorities to conduct the research at UPTD SMAN 2 Polewali. Next, the researcher will explain the objectives and benefits of the study to the teachers involved, assuring them that the collected data will remain confidential. Subsequently, the questionnaire will be distributed to 50 predetermined teachers. Data collection will be conducted directly at the school to ensure high participation rates and facilitate the questionnaire completion process (Mukhula et al., 2021).

The benefit of this procedure is ensuring that all involved teachers have equal opportunities to provide their views and experiences, resulting in reliable and representative data.

Data analysis in this study will be conducted using descriptive analysis to provide a general overview of teacher involvement in Professional Learning Communities (PLCs) and their competencies. This technique enables the researcher to identify patterns and trends in the collected data and describe the respondents' characteristics statistically. Additionally, descriptive analysis will be used to calculate the average, frequency, and percentage of each questionnaire

item, making it easier to understand how PLC participation relates to teacher competency improvement. The results of this analysis are expected to provide valuable insights for developing educational policies and school learning practices. Furthermore, the findings will be presented in tables and graphs to clarify the obtained results, making them easier for readers to comprehend.

Data analysis in this study will be conducted using descriptive analysis to provide a general overview of teacher involvement in Professional Learning Communities (PLCs) and their competencies (Pectchara, 2020). This technique enables the researcher to identify patterns and trends in the collected data and describe the respondents' characteristics statistically. Additionally, descriptive analysis will be used to calculate the average, frequency, and percentage of each questionnaire item, making it easier to understand how PLC participation relates to teacher competency improvement (Jones et al., 2013). The results of this analysis are expected to provide valuable insights for developing educational policies and school learning practices. Furthermore, the findings will be presented in tables and graphs to clarify the obtained results, making them easier for readers to comprehend.

Results

The results of this study were analyzed using the SPSS 29 statistical application, employing a descriptive statistical approach to explore the impact of teacher participation in Professional Learning Communities (PLCs) on enhancing professional competencies. The analysis highlights key statistical measures such as mean, median, and standard deviation to provide a comprehensive overview of respondents' perceptions and experiences.

Table 1.descriptive statistics of teacher participation in professional learning communities

Descriptive Statistics (Mean, Median, Std. Deviation)

	Variable	Mean	Std. Deviation	Median
1	X1	4.82	0.438	4.82
2	X2	4.8	0.404	4.8
3	X3	4.84	0.37	4.84
4	X4	4.8	0.404	4.8
5	X5	4.88	0.328	4.88
6	X6	4.8	0.404	4.8
7	X7	4.82	0.438	4.82
8	X8	4.8	0.404	4.8
9	X9	4.84	0.37	4.84
10	X10	4.84	0.37	4.84

Participation Dimension

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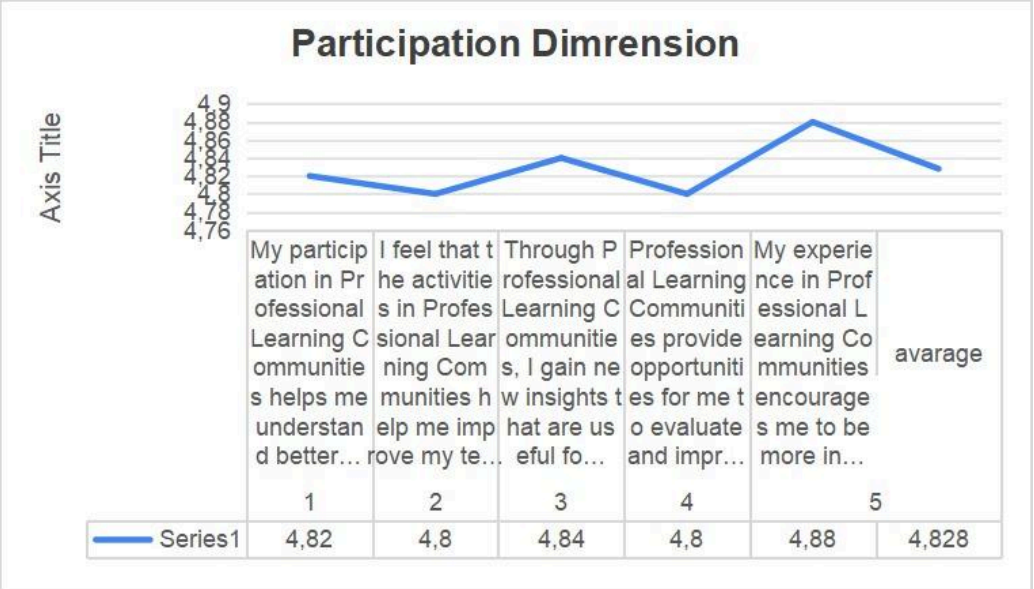


Figure 1. analysis of participation dimensions in professional learning communities (plcs)

Based on the provided chart, there is a positive trend showing a relationship between teachers' participation in Professional Learning Communities (PLCs) and the improvement of their teaching practices (Voelkel & Chrispeels, 2017). The data reveals that the average teacher participation score tends to be high, nearing the maximum, indicating that most respondents hold a positive view of the existence and benefits of PLCs. This reflects a high level of enthusiasm and engagement among teachers in collaborative activities designed to enhance their professional competencies (Schaap & Bruijn, 2017). Such participation contributes to creating a learning environment that fosters innovation, reflection, and the exchange of ideas among teachers.

Furthermore, the chart shows consistent positive impacts experienced by teachers regarding changes in their teaching strategies and lesson planning. This suggests that PLCs significantly influence teachers to adopt new and more effective teaching techniques. Additionally, active participation in these communities seems to boost teachers' confidence in implementing more innovative teaching methods. Therefore, it can be concluded that PLCs not only serve as discussion forums but also act as a key catalyst in strengthening teacher competencies and improving overall education quality.

Experience Dimension

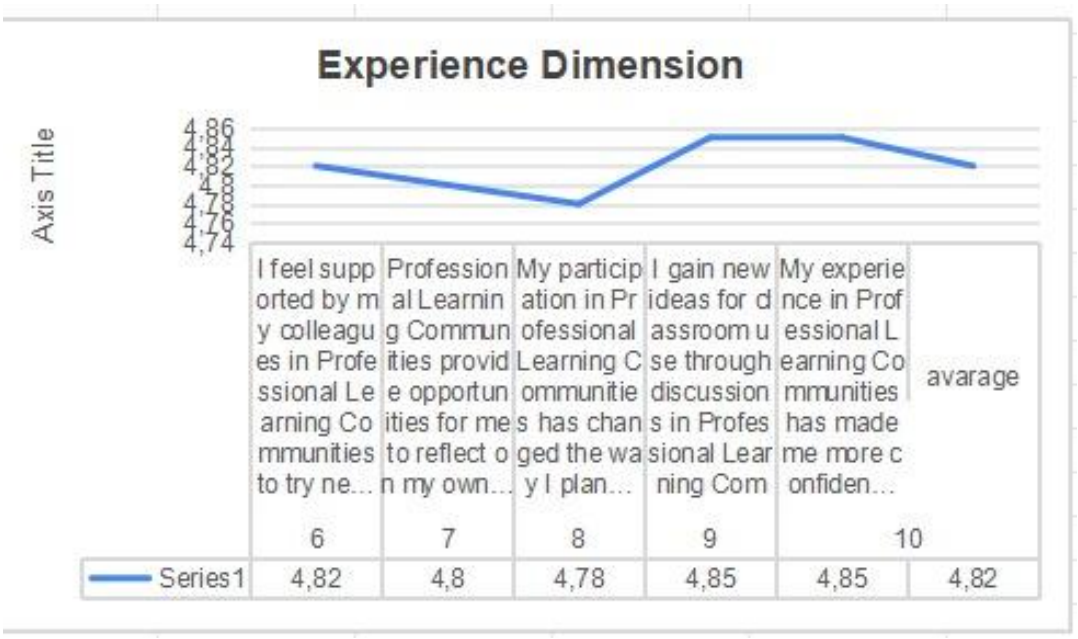


Figure 1. analysis of experience dimensions in professional learning communities (plcs)

Based on the chart, the data shows that teachers' participation in Professional Learning Communities (PLCs) consistently yields positive experiences. The average scores are high, nearing the maximum, suggesting that teachers feel supported by their peers when trying new teaching techniques, highlighting the importance of collaboration in enhancing professional skills. Additionally, the chart reveals that PLCs provide a reflective space for teachers to evaluate their teaching practices. Such reflection allows teachers to identify the strengths and weaknesses of their methods, encouraging the improvement of teaching quality.

Furthermore, PLCs seem to offer not only new ideas for classroom application but also influence teachers' mindsets and lesson planning. These experiences boost their confidence in implementing more effective teaching methods. The consistently high average scores across all indicators affirm that PLCs function as a collective learning ecosystem significantly impacting professional competency development. Thus, PLCs are not merely discussion forums but strategic tools for fostering a culture of continuous competency development in educational settings.

Discussion

Subheading Level 2

The results show that teachers' participation in Professional Learning Communities (PLCs) consistently has a positive impact on the development of their professional competence (Prenger et al., 2018), especially in the implementation of more innovative and effective learning strategies. PLCs provide a collaborative environment that allows teachers to share experiences, discuss challenges and seek solutions together, thus encouraging confidence in trying new approaches and creating more structured and relevant lesson plans(Zamri et al., 2020).

In addition, PLCs serve as reflection spaces that help teachers evaluate their

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teaching practices, promoting continuous improvement in teaching quality (Schaap & Bruijn, 2017). However, this success depends on the level of active participation of teachers who are often constrained by workload and time constraints. Therefore, school support, such as reducing administrative burdens and providing dedicated time for PLC activities, is needed for this programme to function optimally in supporting teacher competency development and improving education quality.(Hairon, 2020)

Subheading Level 3

The findings have important implications for teachers, curriculum, learners and all educational actors (Limson, 2023). For teachers, PLCs can be utilised as a platform to improve pedagogic, professional, social and personal competencies through collaboration and reflection (Schaap & Bruijn, 2017). With support from the school, such as adequate time management and reduced administrative burden, teachers can focus more on self-development and innovation in the learning process(Caena & Vuorikari, 2021). In terms of curriculum, the results of discussions in PLCs can help develop teaching materials that are more relevant and adaptive to the needs of students and the times, while integrating technology and innovative learning methods. Learners will also benefit directly in the form of a more interesting, interactive, and contextualised learning experience, thus supporting the achievement of optimal learning outcomes.

For all education actors, including school principals, education offices and policy makers, it is important to make PLCs an integral part of the education quality development strategy (Nehring & Fitzsimons, 2011). The programme requires systemic support that includes time allocation policies, resources and training of competent PLC facilitators. In addition, regular evaluation of PLC implementation is needed to ensure the programme's effectiveness in promoting learning innovation and developing teacher competencies(Nawab & Sharar, 2022). With cooperation and commitment from all parties, PLCs can be one of the strategic approaches that not only improve teacher quality, but also have a long-term impact on the overall progress of education

Academically, the existence of PLCs as an educational development strategy has been proven effective in many global contexts. However, its effectiveness depends largely on the extent to which the programme is institutionally supported and consistently implemented. In the Indonesian context, where education challenges include access disparities, teacher workloads and time constraints, it is important to pay attention to these factors for PLCs to be implemented well. In addition, it is important to ensure that PLCs are not just a venue for routine discussions, but also a space that provides concrete solutions to learning problems. The emphasis on critical reflection, effective collaboration and planned follow-up will strengthen the positive impact of PLCs on all aspects of education. With a comprehensive approach, PLCs can be a catalyst for significant change in creating a higher quality and more sustainable education system.

The findings on Professional Learning Communities (PLCs) make a significant theoretical contribution to the development of teaching science, particularly in improving the effectiveness of collaboration between teachers. The concept of PLCs

emphasises the importance of community-based teaching, where teachers function not only as teachers but also as learners who support each other in improving their competencies. The model underlines that the development of effective pedagogy requires a reflective and collaborative approach, which can be applied to enrich the theories of experiential learning and collaborative teaching. As such, PLCs open up opportunities to integrate new approaches in educational theory, orientated towards sustainably improving the quality of learning.:

At the high school level, this theoretical impact can be realised in the development of a more adaptive and local needs-based curriculum. By utilising PLCs, schools can create a learning environment that encourages teaching innovations that are relevant to the needs of adolescents at high school age. The concept also supports the development of interdisciplinary learning, where teachers from different subject areas can work together to create integrative learning projects. In addition, the theory on collaboration in PLCs can be used as a guide to enhance the school's role as a dynamic learning community, so that it not only produces academically competent graduates but also ready to face real-world challenges.

The similarity in this study with previous research lies in the finding that Professional Learning Communities (PLCs) have a positive impact on teacher competency development. Previous studies, such as those conducted by Timperley et al. (2017) and Garet et al. (2020), show that teachers' involvement in PLCs can improve their pedagogical skills, classroom management, and application of technology-based learning methods. This is in line with the results of this study which confirms that participation in PLCs creates a collaborative space for teachers to share experiences and seek solutions together, thus promoting improved professional competence and learning innovation. These similarities reflect the universal nature of PLCs as a platform that supports teachers' professional development, regardless of geographical context.

However, there are also significant differences in this study, particularly related to the local Indonesian context which has unique challenges, such as high teacher workloads and limited time for collaboration. This study highlights the importance of contextual factors, which have not been widely discussed in previous research. In addition, this study used a more in-depth approach to teachers' direct experiences of PLCs, which provided specific insights into how PLCs can be optimised in the local environment. Support from other studies, such as Hord (1997) and Vescio et al. (2008), corroborates these findings by showing that collaboration in PLCs consistently drives improvements in teacher competencies and student learning outcomes. This proves that despite different challenges and contexts, the basic principle of PLCs as a catalyst for learning remains relevant and significant in various educational environments.

Conclusion

The results of this study show that teacher participation in Professional Learning Communities (PLCs) has a significant influence on improving teacher competence. Through active involvement in PLCs, teachers can develop pedagogical, professional, social, and personal competencies as a whole. PLCs

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provide a collaborative space for teachers to share experiences, discuss challenges and design solutions together, which directly improves their ability to implement innovative and effective learning strategies. In addition, the reflection facilitated by PLCs helps teachers evaluate and improve teaching practices, thus supporting continuous improvement of education quality.

IThis study has some limitations that need to be recognised. Firstly, the study focused on a particular local context and so the results may not be generalisable to all areas with different characteristics. Secondly, the data used is mainly quantitative, so in-depth insights into the dynamics and interactions in PLCs may not be fully explored. For future research, it is recommended to expand the scope of the study area to obtain more representative results. In addition, the use of mixed-methods combining quantitative and qualitative approaches may provide a more comprehensive understanding of the implementation and impact of PLCs.

As a recommendation, future research should further explore the contextual factors that influence the success of PLCs, such as school policies, institutional support and collaborative work culture. In addition, research could also focus on developing PLCs models that suit local needs, including the integration of technology to support more effective collaboration. With a more in-depth and comprehensive approach, future research is expected to make a greater contribution to the development of strategies to strengthen teacher competence and improve the overall quality of education.

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