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A SWOT–CSF Integrated Strategy Model for Strengthening Teachers' Pedagogical Competence Through Professional Learning Communities in Primary Schools

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ABSTRACT

Strengthening the quality of learning requires urgent improvements in teachers' pedagogical competence. Schools have developed Professional Learning Communities (PLCs) as collaborative learning forums to support continuous teacher development. However, limited studies have examined PLC implementation using a strategic management perspective. This study aims to formulate effective PLC implementation strategies to improve teachers' pedagogical competence at an Islamic Elementary School. A qualitative case study approach with a qualitative-dominant mixed-methods design was employed, using data collected through observation, interviews, and documentation, and supported by a SWOT analysis and Critical Success Factors (CSFs). The findings reveal key internal strengths, including strong teacher collaboration, an open organizational culture, and ICT support, as well as external opportunities derived from the Merdeka Curriculum policy and foundation support. The SWOT–CSF integration identified three priority strategies with the highest relevance scores: mentoring and knowledge transfer, open impact reporting, and ICT-based training material curation. This study contributes a data-driven strategic framework for PLC implementation, offering both theoretical and practical implications for strengthening teachers' pedagogical competence in primary school contexts.

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INTRODUCTION

The quality of educators is an important factor in improving educational quality. According to the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System Educators must have the minimum required qualifications and certification appropriate to their teaching level. They must also be physically and mentally healthy and able to realise the objectives of national education. In addition to qualifications and certification, comprehensive mastery of teaching competencies is essential for improving educational quality (Sulastri et al., 2020; Zhou et al., 2023). According to Law Number 14 of 2005 concerning Teachers and Lecturers of the Republic of Indonesia, Article 10 states that teacher competencies consist of pedagogical, personality, social, and professional competencies. Of these four competencies, pedagogical competencies are central because they directly relate to teachers' abilities to design, implement, and evaluate learning (Istijarti, 2023).

In the Regulation of the Director General of Teachers and Education Personnel of the Ministry of Education, Culture, Research, and Technology Number 2626/B/HK.04.01/2023 concerning Teacher Competency Models, article 6 paragraph (2) explains that pedagogical competence is the ability to manage student learning. Teachers' pedagogical competence greatly influences the quality of learning. (Rosyada et al., 2021). However, various indicators indicate that teachers' pedagogical competence in Indonesia remains suboptimal. Education Report data sourced from the National Assessment, including the Minimum Competency Assessment, Learning Environment Survey, and Character Survey, show that the dimension of learning quality, as a representation of teachers' pedagogical competence, still faces challenges (Kemendikbud, 2024). The 2025 Majalengka Regency Education Report records a primary school learning quality score of 65.9, which is categorized as good. However, comparatively, this achievement is in the 41-60

percent quintile at the West Java Province level, which indicates a middle position and is not yet competitive compared to other regions. This condition indicates that improving the quality of learning, especially at the elementary school level, still requires more systematic and sustainable intervention.

Similar findings are reflected in the results of the Service Delivery Indicators (SDI) survey, which was conducted by Yarrow et al. (2020). The survey, which was coordinated by the Ministry of Education and the Ministry of Religious Affairs, involved 1,838 teachers and 3,368 fourth-grade students and aimed to measure the quality of educational services in Indonesia. The results show that teachers' average knowledge mastery scores in Indonesian Language, Mathematics, and Pedagogy were only 39.6, which is lower than the global SDI average of 43. Teachers' scores for pedagogical knowledge were particularly low, reaching only 22 percent, far below the minimum SDI standard of 80 percent. These results confirm the urgent need to strengthen teachers' pedagogical competencies in order to improve the quality of educational services and student learning outcomes (Ganendra et al., 2025; Handriadi et al., 2024)

One strategic approach to the continuous development of teacher competencies is through professional learning communities (PLCs). These are groups of teachers who share and evaluate each other's teaching practices through reflection, collaboration, openness, a focus on growth and learning, and joint activities (Satori, 2016; Sunaengsih et al., 2020). Implementing PLCs is important because it enables teachers to continuously improve their learning strategies and raise student achievement. PLCs enable teachers to support each other, share responsibilities, and develop more effective learning practices (Dufour et al., 2016). Various studies show that PLCs positively impact teachers' learning strategies and students' academic achievement (Dinh et al., 2023; Khasawneh et al., 2023).

However, in practice, professional learning communities (PLCs) still face many challenges, including teachers' heavy workloads, lack of support for PLC implementation, and a hierarchical work culture (Truong et al., 2025). Field findings based on interviews with the Majalengka District Education Office show that teacher fatigue with PLC activities is one of the main obstacles to program sustainability. Therefore, adaptive and contextual PLC management strategies are needed so that professional learning communities can run effectively and sustainably (Hua et al., 2024; Roesminingsih & Windasari, 2025).

Previous studies have shown that PLC has a positive impact on teacher professional development. Nurkartika (2023) found that implementing PLC at the high school level can enhance teacher professionalism via discussions, workshops, seminars, and in-house training. Dinanty et al. (2024) also found that implementing PLC can develop teacher competencies and improve student learning outcomes at Nusantara Capital Support School (IKN). This is consistent with the findings of Hendrickx et al. (2025), who confirmed that the effectiveness of teacher professional development is greatly influenced by the patterns of interaction and collaboration within PLCs. Specifically, research by Khusna & Priyanti (2023) shows that implementing PLC alongside a learning-oriented community model significantly improves teachers' pedagogical competencies.

Although research on Professional Learning Communities (PLCs) has developed extensively, existing studies are still dominated by a focus on instructional leadership, collaborative culture, and the impact of PLCs on teacher competence or student learning outcomes. However, existing PLC studies largely overlook how strategic decisions are formulated and prioritized, particularly using integrated analytical frameworks such as SWOT and CSF in primary school contexts. Furthermore, most PLC studies are oriented towards results, rather than the strategic decision-making process that underlies the sustainability of PLCs. Responding to this gap, this study offers a novel strategic framework for PLC implementation by integrating SWOT analysis and Critical Success Factors (CSF), designed to guide PLC implementation decision-making in a systematic and contextual manner. The novelty of this research lies in positioning PLC as a data-driven and reflective strategic process, thereby not only enriching the theoretical study of PLC but also providing a relevant implementation program for the professional development of elementary school teachers.

METHOD

This study uses qualitative research with SWOT and CSF analysis methods to produce PLC implementation strategies in schools that can improve teachers' pedagogical competencies (Bungin, 2022; Rangkuti, 2017; Waruwu, 2023). The research location was determined based on purposive sampling, namely SD IT Tazkia Insani, which has adopted the Professional Learning Community (PLC) concept. Research participants were determined through purposive sampling to ensure that the individuals involved were those who played an active role in the implementation of the Professional Learning Community (PLC) at school. The main participants were the principal, who acted as the strategic decision maker and person in charge of planning and managing PLC activities, and two teachers who were directly involved in the implementation of PLC, including in learning collaboration activities, teaching practice reflection, and teacher professional development discussions. The selection of participants was based on their direct involvement, experience, and understanding of the dynamics of PLC implementation in schools.

Data collection techniques employed included triangulation through observation, interviews, and documentation (M Husain et al., 2023; Sugiyono, 2022). Data collection was conducted over a period of three months, from October to December 2025. In-depth interviews were conducted with school principals and teachers, guided by criteria developed based on the research objectives and PLC dimensions. These individual interviews, which lasted 30–45 minutes, were conducted in the principal's office with digital audio recording equipment and were conducted in Indonesian. Meanwhile, observation activities were carried out using non-participant observation techniques, focusing on PLC implementation and teaching practices. Document analysis involved collecting documents related to the implementation of PLC in schools, including the Annual Work Plan, the Learning Community Decree, PLC programmed, minutes of meetings, attendance lists, and other supporting documents.

This study applies thematic analysis as a qualitative analysis technique to explore, examine, and articulate patterns of meaning or themes that emerge from the research data (Lochmiller, 2021). The analysis process refers to the six stages of thematic analysis proposed by Braun & Clarke (2022) which were chosen because they provide a systematic and rigorous analysis procedure for identifying and interpreting patterns in qualitative data, while also providing flexibility in the inductive development of themes. The stages of analysis include: (1) familiarization with the data through verbatim transcription and repeated reading; (2) initial coding by systematically coding lines inductively; (3) theme development by grouping codes into potential themes; (4) reviewing and refining themes based on internal consistency and differences between themes; (5) defining and naming themes through the formulation of clear conceptual descriptions; and (6) compiling analysis reports by linking empirical findings with relevant literature and theoretical frameworks.

The data analysis approach used in this study is inductive, in which categories and themes are constructed progressively based on empirical findings in the field. The analysis process is carried out through stages of open coding, followed by category grouping and thematic development. Through this process, researchers seek to identify regularities, patterns, and meanings that emerge organically from informants' narratives and field observations. SWOT analysis is based on the principle of optimally utilizing the strengths and opportunities possessed by schools in the implementation of PLC, as well as striving to reduce the impact of weaknesses and threats that can hinder the effectiveness of PLC implementation (Rangkuti, 2017). This method uses the IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) matrices to weight and rate each factor to obtain effective and adaptive strategies (Rangkuti, 2017; Syifa Syahirah, 2023).

The SWOT analysis begins with identifying internal factors, namely strengths and weaknesses, based on findings from research data analysis. Next, external factors, including opportunities and threats, are also analyzed from research data. Each factor is then assessed, weighted, and ranked when filling out the IFAS and EFAS matrices. Based on the combination of internal and external factors, strategies are formulated into four categories, namely SO (Strength-Opportunity) strategies, WO (Weakness-Opportunity) strategies, ST (Strength-Threat) strategies, and WT (Weakness-Threat) strategies. The IFAS, EFAS, and CSF matrices are formulated based on the questionnaire results. There were 25 questionnaire respondents, consisting of the principal and teachers at Tazkia Insani Elementary School.

The IFAS matrix is compiled through several analytical steps. First, each internal factor is assessed for its urgency using a scale of 1 to 4, ranging from “not urgent” to “very urgent.” These urgency scores are then added up to obtain the initial total weight for all strength and weakness indicators. Second, the relative weight is calculated by dividing the weight of each indicator by the total weight so that the overall relative weight is 1 or 100 percent. After that, each factor is given a rating to assess its impact on the organization's condition using a scale of 1 to 6, which represents assessments from “very poor” to “very good.” The final stage is to calculate the factor score by multiplying the relative weight and rating of each indicator. The final score on the IFAS matrix describes the internal strengths or weaknesses of the organization, where a score close to 1 indicates a predominance of weaknesses, while a score close to 4 indicates that internal strengths are more prominent.

The EFAS matrix is filled in systematically over several stages. First, the urgency of each external factor is assessed using a scale of 1 to 4, ranging from 'not urgent' to 'very urgent'. The weights of all opportunity and threat indicators are then added together to obtain the initial total weight. Next, the relative weight is calculated by dividing the weight of each indicator by the total weight, ensuring that the total relative weight reaches 1 or 100 per cent. Next, each indicator is given a rating to assess the impact of opportunities and threats on the organization’s condition, using a scale of 1 to 6, which describes assessments from 'very poor' to 'very good'. In the final stage, the score for each indicator is obtained by multiplying the relative weight by the rating. The total score in the EFAS matrix shows the organization’s position in relation to external factors: a score close to 1 indicates that threats are more dominant, while a score close to 4 indicates that there are more external opportunities for the organization.

After calculating the IFAS and EFAS matrices, the values of both matrices are compared to determine the organization's quadrant position. The determination of the quadrant position in SWOT analysis is done by

calculating the difference between the internal and external factor scores, then mapping the results into a quadrant diagram. If the strength-weakness difference is positive, the organization is placed on the right side of the horizontal axis; conversely, a negative value places it on the left side. Meanwhile, a positive opportunity-threat difference places the point at the top of the vertical axis, and a negative value places it at the bottom. The combination of these two differences determines the organization's position in Quadrant I, II, III, or IV, each of which indicates a different strategic orientation.

The SWOT analysis quadrant is used to determine the strategic position of an organization by considering internal strengths and weaknesses as well as external opportunities and threats, so that the most appropriate strategy can be formulated (Rangkuti, 2017). When an organization is in Quadrant I, its strengths and opportunities allow for the implementation of an aggressive growth strategy. In Quadrant II, the organization can still utilize its internal strengths despite facing external threats, making diversification a relevant strategy. If it is in Quadrant III, the organization has opportunities, but is limited by internal weaknesses, so internal strengthening efforts are needed to maximize opportunities. Meanwhile, a position in Quadrant IV indicates unfavorable conditions, so the organization needs to focus on resource efficiency or restructuring measures to maintain sustainability.

After determining the organizational quadrant, the strategy formulation stage is carried out using a SWOT matrix based on the position of the organizational quadrant. At this stage, the researcher creates a SWOT matrix that clearly describes the strategy formulation based on the combination of factors, namely the SO (strength-opportunity) strategy, the WO (weakness-opportunity) strategy, the ST (strength-threat) strategy, and the WT (weakness-threat) strategy.

After determining alternative strategies from the SWOT matrix, critical success factors (CSF) were determined. CSF analysis is used to compile the determining factors and measures that the organization wants to achieve (Rockart & Bullen, 1986). CSF (Critical Success Factors) is used to determine the relevance of the strategies that have been formulated with the objectives of implementing PLC in schools. CSF analysis was conducted by filling out a questionnaire with a scale of 1 to 4 (1 = not relevant, 2 = less relevant, 3 = relevant, 4 = very relevant). After all respondents gave their assessments, the next step was to calculate the average relevance score for each strategy. This score reflects the collective perception of the informants regarding the importance of each strategy for the successful implementation of PLC. The average value is then used as the basis for ranking strategies, starting from the strategy with the highest score as the most priority strategy to the strategy with the lowest score as the least urgent strategy to be implemented. This process ensures that the selected strategies truly reflect the needs of the organization and are in line to improve teachers' pedagogical competence.

To ensure data validity, this study refers to four criteria, namely credibility, dependability, confirmability, and transferability(Satori & Komariah, 2020). Credibility is maintained through source triangulation and member checking to ensure that the information obtained truly reflects the conditions in the field. Dependability is fulfilled by systematically recording all research procedures and conducting ongoing discussions with supervisors to ensure consistency of findings. Confirmability is upheld through an audit trail that documents the process from data collection to conclusion drawing, and is reinforced by triangulation and member checking to maintain objectivity. Meanwhile, transferability is achieved by compiling a complete, clear, and reliable research report so that the findings can be applied in similar contexts.

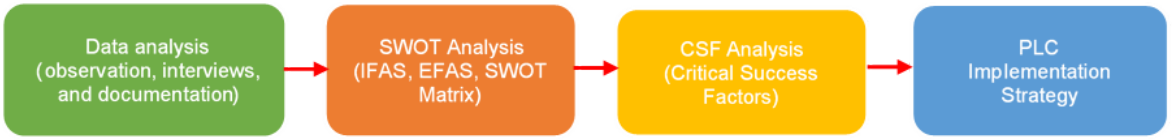

Figure 1. Research Methodology Framework

RESULTS AND DISCUSSION

Result

The analysis of research data produced supporting and inhibiting factors that affect the effectiveness of PLC implementation at SD IT Tazkia Insani. Based on the results of interviews, observations, and documentation studies, this study identified supporting and inhibiting factors that affect PLC implementation in both schools. These supporting and inhibiting factors originate from within and outside the school. These factors arise from the dynamics of teacher collaboration, the availability of facilities and policies, the school's work culture, and the technical and managerial challenges faced during the PLC implementation process.

The results of the observation show that internal supporting factors that influence the effectiveness of PLC implementation at SD IT Tazkia Insani include PLC activities that are carried out regularly and in a structured manner, teacher participation in discussions and sharing of good practices, collaboration among teachers in professional development, and a work culture that is open to ideas, criticism, and learning innovations. The principal added that external supporting factors include collaboration and exchange of good practices with external teacher communities such as JSIT, KKG, and other professional training programs.

"Communities outside the school add to the quality of teachers. For example, there are PLC meetings for first-grade teachers outside the school on literacy and numeracy learning and training at JSIT (Integrated Islamic School Network). Forums like this allow us to learn from the experiences of other schools. Sometimes, there are ideas or methods that work in public schools that we can adapt in private schools, or vice versa. We usually bring the results of activities outside of school back to the PLC forum at school to share with other teachers." (School Principal)

Interviews with classroom teachers also revealed that there was support from the Education Office and supervisors in implementing PLC in schools. “Support from the local government or education office comes through supervisors. For example, supervisors act as delegates from the local government or office to provide material in the classroom, such as teaching methods, imparting knowledge, and sharing experiences.” (Teacher). In addition to support from the Education Office, subject teachers added that the implementation of PLC in schools also received full support from the Foundation. “The foundation's support for the club includes providing an air-conditioned room and a projector to display interesting material.” (Teacher)

The results of the documentation analysis show that there is financial support from foundation funds for community learning programs. Regular BOS and performance-based BOS funds focus on teacher development carried out in schools through community learning activities or monthly school reflections. Reports on school facilities and infrastructure also show that schools support access to digital technology and online learning platforms that support the development of virtual PLCs. In addition to supporting factors, there are also inhibiting factors that affect the effectiveness of PLC implementation in schools. The results of observations show that the inhibiting factors for PLC implementation at SD IT Tazkia Insani include collective reflection that has not produced concrete follow-up actions, and the use of student learning outcome data in PLC and learning reflection is still limited.

In interviews, the principal explained the factors that inhibit the implementation of PLC in schools. “The obstacles we face most often are time and teacher motivation. Because teachers teach until noon, PLC activities scheduled for two o'clock are often delayed because some teachers have not had time to attend.” (School Principal). Subject teachers added PLC schedules that conflicted with other school activities. “In addition, some teachers have different schedules. Some teachers are involved in extracurricular activities and scouting, which also becomes an obstacle because teachers do not always participate in collaborative learning activities.” (Teacher)

Classroom teachers explained another hindering factor, namely the follow-up after the PLC implementation. “So, even though we have discussed solutions together, only some teachers implement them. There is also a lack of reinforcement from above, so the implementation is not uniform.” (Teacher) implementation, namely that teacher reflection has not been systematically documented in the form of individual teacher reflection journals. From the results of supervision and teacher data, the rotation or replacement of teachers has become an obstacle to the consistency of implementation and follow-up of PLC results.

The results of the supporting and inhibiting factors from the research data analysis were then mapped in a SWOT analysis framework. This mapping produced four groups of indicators that represent the internal and external conditions of schools in implementing PLC implementation, namely, that teacher reflection has not been systematically documented in the form of individual teacher reflection journals. From the results of supervision and teacher data, the rotation or replacement of teachers has become an obstacle to the consistency of implementation and follow-up of PLC results. The results of the supporting and inhibiting factors from the research data analysis were then mapped in a SWOT analysis framework. This mapping produced four groups of indicators that represent the internal and external conditions of schools in implementing PLC.

Table 1. Strengths, Weaknesses, Opportunities, and Threats of PLC Implementation

Strengths	Weaknesses
1. PLC activities are carried out regularly and in a structured manner. 2. Teachers actively participate in discussions and share good practices. 3. The school has adequate facilities and resources for PLC activities. **4.** Teachers collaborate in professional development. 5. A work culture that is open to ideas, criticism, and learning innovations	1. There is limited time for PLC implementation. 2. PLC schedules often conflict with extracurricular or other activities. 3. The school has adequate facilities and resources for PLC activities. 4. Collective reflection has not resulted in concrete follow-up actions. 5. The use of student learning data in PLC and learning reflection is still limited.
Opportunities	**Threats**
1. The existence of the National Independent Curriculum and Deep Learning policies that encourage the strengthening of reflection-based PLCs 2. Support from the Foundation in organizing and funding PLC activities 3. Support from the Education Office and school supervisors who actively provide guidance and serve as resource persons in PLC activities to strengthen teachers' pedagogical competencies. 4. Collaboration and exchange of good practices with external teacher communities such as JSIT, KKG, and other professional training programs. 5. Access to digital technology and online learning platforms that support the development of virtual PLCs.	1. Changes to national or regional education policies that could impact the implementation of PLC. 2. Changes to foundation policies may affect the programme's sustainability. 3. Teacher rotation or replacement could hinder consistency in implementing and following up on PLC results. 4. Limited access to external training or professional forums outside the school area. **5.** Differences in quality standards and training systems between external institutions (the Education Office, JSIT, KKG, and other institutions) cause inconsistencies in teacher development.

Internal Factor Analysis Summary (IFAS)

After identifying the strengths, weaknesses, opportunities, and threats, the principal and teachers completed the IFAS and EFAS matrices using questionnaires. The following are the weight and rating calculations for the IFAS matrix of PLC implementation at Tazkia Insani Elementary School, based on the questionnaire results.

Table 2. IFAS Matrix

No	Strengths	Weight	Relative	Rating	Score
1	PLC activities are carried out regularly and in a structured manner.	2,5	0,093	5,0	0,47
2	Teachers actively participate in discussions and share good practices.	2,6	0,096	4,9	0,47
3	The school has adequate facilities and resources for PLC activities.	3,0	0,110	4,9	0,53
4	Teachers collaborate with each other in professional development.	2,9	0,105	5,1	0,54
5	A work culture that is open to ideas, criticism, and learning innovations	2,8	0,104	4,9	0,51
	Total	13,7	0,508		2,51
	Weaknesses				
1	There is limited time for PLC implementation.	2,4	0,089	3,1	0,28
2	PLC schedules often conflict with extracurricular or other activities.	2,7	0,100	3,6	0,36
3	The school has adequate facilities and resources for PLC activities.	2,4	0,090	3,2	0,29
4	Collective reflection has not resulted in concrete follow-up actions.	3,0	0,112	3,5	0,39
5	The use of student learning data in PLC and learning reflection is still limited.	2,7	0,100	3,5	0,35
	Total	13,3	0,492		1,67
	Total Weight x Score for *Internal Factor*	27,0	1,000		4,17

The results of the IFAS matrix calculation show that the school's total internal factor score is 4.17. This exceeds the predetermined threshold value of 3.50. This indicates that the school's internal conditions for implementing PLC are strong. The total internal strength score of 2.51 also exceeds the total internal weakness score of 1.67. This finding suggests that the school's internal strengths outweigh its weaknesses. The school's greatest internal strength lies in collaboration between teachers in professional development, with a score of 0.54. This is followed by adequate school facilities and infrastructure for PLC activities (0.53); a work culture open to ideas, criticism and learning innovations (0.51); regular, structured PLC activities (0.47); and teacher participation in discussions and the sharing of good practices (0.47).

The school's internal weaknesses have a total score of 1.67, indicating that some weaknesses still need to be addressed, but their impact is not greater than the school's internal strengths. The most significant indicator of the school's internal weaknesses is that teacher reflection has not been systematically documented in the form of individual teacher reflection journals, with a score of 0.39. This is followed by other weakness indicators, namely PLC schedules often clash with extracurricular activities or other activities (0.36), the use of student learning outcome data in PLC and learning reflection is still limited (0.35), collective reflection has not produced concrete follow-up (0.29), and limited time for implementing PLC (0.28).

Table 3. EFAS Matrix

No	Opportunities	Weight	Relative	Rating	Score
1	The existence of the National Independent Curriculum and Deep Learning policies that encourage the strengthening of reflection-based PLCs	2,8	0,102	5,0	0,50
2	Support from the Foundation in organizing and funding PLC activities	3,1	0,111	4,2	0,47
3	Support from the Education Office and school supervisors who actively provide guidance and serve as resource persons in PLC activities to strengthen teachers' pedagogical competencies.	2,7	0,098	4,9	0,47
4	Collaboration and exchange of good practices with external teacher communities such as JSIT, KKG, and other professional training programs.	2,6	0,095	4,6	0,44
5	Access to digital technology and online learning platforms that support the development of virtual PLCs.	2,8	0,100	4,5	0,45
	Total	**14,0**	**0,51**		**2,33**
	Threats				
1	Changes to national or regional education policies that could impact the implementation of PLC.	2,5	0,090	3,9	0,35
2	Changes to foundation policies may affect the programme's sustainability.	2,9	0,104	4,2	0,44
3	Teacher rotation or replacement could hinder consistency in implementing and following up on PLC results.	2,9	0,106	4,3	0,45
4	Limited access to external training or professional forums outside the school area.	2,6	0,092	3,1	0,29
5	Differences in quality standards and training systems between external institutions (the Education Office, JSIT, KKG, and other institutions) cause inconsistencies in teacher development.	2,8	0,102	3,5	0,36
	Total	**13,7**	**0,49**		**1,89**
	Total Weight x Score for *External Factor*	**27,7**	**1,00**		**4,22**

External Factor Analysis Summary (IFAS

The EFAS matrix calculation results show that the school's external environment significantly contributes to the sustainability and strengthening of Professional Learning Community (PLC) implementation, achieving a total score of 4.22. This value is the result of an opportunity score of 2.33 and a threat score of 1.89 being accumulated, indicating that external opportunities have a greater influence than the obstacles schools face. These findings indicate that the external context is supportive, providing schools with the strategic flexibility to develop PLCs sustainably.

The analysis results show that schools have a variety of significant opportunities to strengthen the implementation of PLC. The indicator providing the most positive support is the existence of National Independent Curriculum and Deep Learning policies, which encourage reflection-based PLC, with a score of 0.50. Other opportunity indicators include support from the Foundation for organizing and funding PLC activities (0.47); active support from the Education Office and school supervisors (0.47); access to digital technology and online learning platforms (0.45); and collaboration and the exchange of good practice with external teacher communities, such as JSIT, KKG, and other professional training (0.44).

A total score of 1.89 on the threat indicator, with a relative weight of 0.49, shows that a number of threats need to be anticipated. The strongest threat, with a score of 0.45, is the indicator of teacher rotation or replacement, which has the potential to hinder the consistency of PLC results implementation and follow-up. This is followed by other threat indicators: changes in Foundation policy affecting program sustainability (0.44); differences in quality standards and training systems between external institutions (0.36); changes in national or regional education policy affecting PLC implementation (0.35); and limited access to external training or professional forums outside the school area (0.29). Although the threats have significant scores, the EFAS matrix results show that they do not overall exceed the contribution of the existing opportunities.

SWOT Quadrant Analysis

The results of the IFAS and EFAS Tazkia Insani Elementary School matrix analysis show that the school is in quadrant I. This is based on the difference between the strength-weakness scores and the opportunity-threat scores. The difference between the strength score and the internal weakness score of the school is 0.84, which is located on the Y-axis to the right of 0 (positive). Then, the difference between the school's opportunity and external threat scores is 0.44, which is above 0 (positive) on the X-axis. With both the X-axis and Y-axis values being positive, the school's position is in quadrant I.

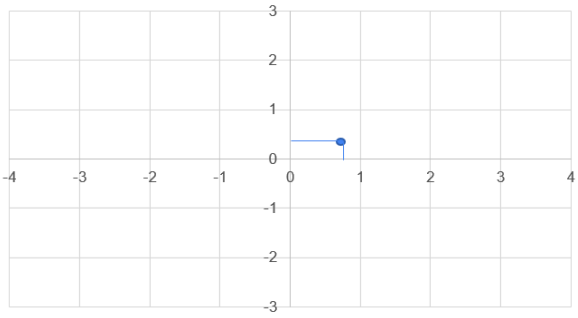

Figure 2. Tazkia Insani Elementary School's SWOT Quadrant Diagram

The results of the SWOT quadrant analysis place the organization in quadrant I. This is based on a comparison between the school's IFAS and EFAS matrix scores, which show that the organization has sufficient internal strengths while facing significant external opportunities. The organization's strategic position indicates that the school is optimally utilizing available opportunities by using its strengths. Therefore, the most appropriate strategy for the school is to adopt an aggressive growth policy (Growth-Oriented Strategy). The strategy is formulated specifically through a combination of internal factors (strengths and weaknesses) and external factors (opportunities and threats), but must be prioritized to support the strategic position of quadrant I, which leads to an aggressive implementation strategy.

SWOT Matrix Framework

After determining the organizational quadrant, the strategy formulation stage is carried out using the SWOT matrix, which is based on the organizational quadrant's position. This matrix clearly illustrates strategy formulation based on combinations of factors: the SO (strengths and opportunities) strategy, the WO (weaknesses and opportunities) strategy, the ST (strengths and threats) strategy, and the WT (weaknesses and threats) strategy.

Table 4. SWOT Matrix

	***Strengths* (S)** S1: There are adequate ICT facilities. S2: Teachers collaborate. S3: The work culture is open to innovation.	***Weakness* (W)** W1: Individual reflection documentation is not yet systematic. W2: PLC schedules conflict. W3: Use of student learning outcome data is limited.
***Opportunities* (O)** O1: Foundation support and funding. O2: Independent Curriculum Policy. O3: Access to digital technology.	**Strategy S-O** 1. Transform the PLC into a technology-based blended learning community to speed up the sharing of good practices with teachers and external communities (S1, O3). 2. Using collaboration and an open culture to pilot innovative lesson study development in line with the demands of the Merdeka Curriculum. (S2, S3, O2). 3. Strengthening collaboration and digitally documenting best practices to enhance legitimacy and accountability to the Foundation and other stakeholders. (S2, O1).	**Strategy W-O** 1. Utilize the Merdeka Curriculum to make the use of learning outcome data the main and structured focus of each PLC reflection session. (W3, O2) 2. Use funding support from the Foundation to develop an integrated e-journal for teacher reflection that must be filled out. (W1, O1) 3. Scheduling some PLC sessions outside of face-to-face hours (asynchronous) using an online platform to reduce schedule conflicts. (W2, O3)
***Threats* (T)** T1: Teacher rotation/replacement. T2: Changes in Foundation policy. T3: Differences in external training standards.	**Strategy S-T** 1. Utilizing collaboration among teachers as a mandatory mentoring and knowledge transfer system to accelerate the adaptation of new teachers. (S2, T1) 2. Using an open culture to proactively present reports on the positive impact of PLC as evidence of performance, maintaining trust and support for the Foundation's policies (S3, T2) 3. Utilizing ICT facilities to filter, compare, and process external training materials to suit the needs and quality standards of the school. (S1, T3)	**Strategy W-T** 1. Develop an approved PLC schedule and integrate it into the Foundation's operational policy to minimise schedule conflicts and ensure programme continuity. (W2, T2). 2. Integrating learning outcome data with quality standards from an external training institution to maintain consistency in coaching direction. (W3, T3). 3. Requiring individual reflection documentation/e-journals as a primary database for knowledge assets, to ensure that tacit knowledge is not lost when teachers change roles. (W1, T1).

CSF Analysis

After determining alternative strategies, critical success factors (CSFs) were identified to select the most effective and relevant approach for implementing a Professional Learning Community (PLC) at Tazkia Insani Elementary School. These CSFs were based on the objective of establishing a sustainable learning community and included the level of adoption and effectiveness of differentiated learning practices, improvement in student learning outcomes, the level of activity and commitment (sense of ownership) of principals and teachers in PLC activities, and the availability and quality of documentation and dissemination of best practices or learning innovations. A CSF analysis was conducted using a questionnaire completed by principals and teachers, who ranked the relevance of each alternative strategy to the PLC goals. The results were then aggregated and ranked from the most to the least relevant, with the strategy achieving the highest relevance score identified as the main strategy of the study.

Table 5. Determining the CSF Sequence PLC Implementation Strategy

No	Strategy	Relevance to the learning community's goals				Total	Ranking CSF
		1	2	3	4		
	Strategy S-O						
1	Transform the PLC into a technology-based blended learning community to speed up the sharing of good practices with teachers and external communities (S1, O3).	3,44	3,36	3,56	3,36	13,72	**X**
2	Using collaboration and an open culture to pilot innovative lesson study development in line with the demands of the Merdeka Curriculum. (S2, S3, O2).	3,48	3,48	3,52	3,48	13,96	**IV**
3	Strengthening collaboration and digitally documenting best practices to enhance legitimacy and accountability to the Foundation and other stakeholders. (S2, O1).	3,44	3,4	3,48	3,52	13,84	**VI**
	Strategi W-O						
4	Utilize the Merdeka Curriculum to make the use of learning outcome data the main and structured focus of each PLC reflection session. (W3, O2)	3,48	3,44	3,48	3,4	13,80	**VIII**
5	Use funding support from the Foundation to develop an integrated e-journal for teacher reflection that must be filled out. (W1, O1)	3,16	3,24	3,2	3,24	12,84	**XI**
6	Scheduling some PLC sessions outside of face-to-face hours (asynchronous) using an online platform to reduce schedule conflicts. (W2, O3)	2,72	2,76	2,84	3,08	11,40	**XII**
	Strategi S-T						
7	Utilizing collaboration among teachers as a mandatory mentoring and knowledge transfer system to accelerate the adaptation of new teachers. (S2, T1)	3,52	3,56	3,52	3,44	14,04	**I**
8	Using an open culture to proactively present reports on the positive impact of PLC as evidence of performance, maintaining trust and support for the Foundation's policies (S3, T2)	3,48	3,56	3,48	3,48	14,00	**II**
9	Utilizing ICT facilities to filter, compare, and process external training materials to suit the needs and quality standards of the school. (S1, T3)	3,56	3,48	3,48	3,48	14,00	**III**
	Strategi W-T						
10	Develop an approved PLC schedule and integrate it into the Foundation's operational policy to minimise schedule conflicts and ensure programme continuity. (W2, T2).	3,44	3,44	3,48	3,48	13,84	**VII**
11	Integrating learning outcome data with quality standards from an external training institution to maintain consistency in coaching direction. (W3, T3).	3,44	3,36	3,48	3,48	13,76	**IX**
12	Requiring individual reflection documentation/e-journals as a primary database for knowledge assets, to ensure that tacit knowledge is not lost when teachers change roles. (W1, T1).	3,4	3,48	3,56	3,48	13,92	**V**

Discussion

Effective PLC implementation is supported by five categories that are key factors. The most fundamental factor is professional collaboration among teachers and the effectiveness of PLC implementation, which is realized through an open work culture, mutual respect, and structured teacher sharing sessions. PLC effectiveness is also driven by clear routines and structures in the implementation of activities, supported by teachers' active participation in discussions and sharing of good practices. These findings are in line with the core of PLC theory, namely, a collaborative culture and focus on learning according to Dufour et al. (2016), which emphasizes that structured collaboration based on common goals is a major factor in the effective implementation of PLC. In addition, policy and institutional support, including support from the principal, funding, and policies from the Education Office in the form of a Learning Community Decree (SK) for each school, are structural supporting conditions that play an important role in the effectiveness of PLC implementation. This is in line with Hord (2004) statement, which highlights that leadership support and school resources influence school reform initiatives, including the consistent implementation of PLC. Effective leadership and regular supervision by the principal can also motivate and provide teachers with support to improve their pedagogical skills (Nurmayuli, 2020; Waridah & Tirsa, 2022; Yayuk & Haqqi, 2024).

Implementation will have a significant impact on improving teachers' professional practices if structured collaboration and institutional support are maintained. If the teacher shares sessions, an open work culture, and goal-based discussion mechanisms are consistently implemented, the learning process in the classroom will be more responsive to students' needs. Teachers will have a stable reflective space to identify learning problems, test strategies, and continuously improve their practices. Support from the principal and official policies in the form of a Learning Community Decree will also ensure the sustainability of activities, so that PLC is not limited to administrative routines, but truly develops as a sustainable quality improvement system.

Other factors that support the implementation of PLCs include the availability of facilities and technology, as well as external networks and professional development opportunities. The findings show that both schools have adequate facilities and technology. This enables teachers to use visual data and learning materials in their teaching, facilitating more engaging and efficient PLC implementation (Nurmayuli, 2020). Additionally, the school's external networks and professional development provide a source of ideas and best practices to be shared in internal forums. These findings confirm that external connections play an important role in broadening teachers' knowledge, which can then be shared within the school's internal PLC. This is consistent with the conclusions of Waridah & Tirsa (2022), who found that teachers' participation in communities outside the school can broaden their knowledge, which can then be shared in the school's internal PLC.

The implementation of PLC is supported by internal factors, namely learning community forums that create a conducive environment for a culture of collaboration. The findings show that active support and commitment from the principal are key pillars in the effective implementation of PLC. This is in line with research Truong et al. (2025) This emphasizes the importance of principal leadership in creating and maintaining a collaborative culture in schools. The effectiveness of PLC is strengthened by the existing culture of cooperation and mutual respect among teachers. The school uses teacher sharing sessions in the learning community as a forum for improving competence and uses ANBK data as material for reflection and follow-up. This reflects the application of the dimension of orientation on results and focus on effective learning in the implementation of PLC (Dufour et al., 2016). Other supporting factors are also realized through financial support from foundation funds and BOS funds that are specifically focused on teacher development through learning communities. Adequate ICT facilities or devices, as well as the allocation of time and facilities for the implementation of learning community activities, indicate the existence of essential structural support (Nurmayuli, 2020; Tahir & Musah, 2020).

The effectiveness of PLC implementation is also supported by external factors. Support from the Education Office comes in the form of performance-based allowances for civil servant teachers. This is in line with research Hendrawijaya et al. (2020) This highlights the role of local government in motivating teachers to improve their performance as professional educators. The role of cross-school collaboration networks such as Teacher Working Groups (KKG), cluster-level Learning Communities, and JSIT (Integrated Islamic School Network) is an important means of broadening knowledge and sharing good practices. These findings reinforce the research by Waridah & Tirsa (2022), which states that teacher involvement in external networks enriches the content and depth of PLC discussions within schools. Furthermore, support from school supervisors as local government delegates plays a role in providing material, knowledge, and sharing their experiences in school learning community forums. In addition, access to external training to increase teachers' knowledge, the results of which are disseminated in school PLCs, complements the external factors that ensure the sustainability and quality of PLCs (Elfarargy et al., 2022; Nurmayuli, 2020).

Research findings indicate that factors hindering the implementation of Professional Learning Communities (PLCs) in both schools are related to time constraints, which affect the continuity of collaborative processes among teachers. PLC activities, such as learning community forums, are often delayed or clash with other commitments, affecting the continuity of discussions, reflections, and follow-ups. PLC meetings that are frequently postponed or clash with other school activities result in teacher absences, affecting the continuity of the collaborative process. This demonstrates that schools have not fully provided the enabling conditions necessary for the effective implementation of PLCs (Shin et al., 2025). According to Dufour et al. (2016), PLC implementation requires clear, regular scheduling to ensure the professional learning cycle runs smoothly. Therefore, schools must provide the necessary basic support in the form of a regular, structured PLC implementation schedule. Additionally, the lack of involvement of certain teachers hinders the development of collective accountability, which lies at the core of PLC implementation. This aligns with research by Duchesne et al. (2025) which states that low teacher participation is a key obstacle to PLC development. Thus, strategies are needed to increase teacher participation in PLC activities in both schools.

The limiting factor of time constraints can be overcome if schools implement a more disciplined and planned Professional Learning Community (PLC) schedule that is protected from conflicting agendas. With consistent implementation of routine scheduling, teachers will have sufficient time to discuss, reflect on, and follow up on learning without interruption from other school activities. The professional learning cycle will become more stable, enabling continuous collaboration. Thus, the school's efforts to provide structured special time will not only support the effectiveness of the PLC, but also strengthen teacher accountability for the continuous improvement of learning quality.

The inhibiting factors that emerged were related to suboptimal documentation and reflection, the incomplete implementation of learning data, and structural and policy constraints. Without structured individual teacher reflection journals and follow-up documentation, the reflection process was not systematically recorded, meaning that collective learning and PLC impact evaluation were not well documented. Reflection documentation is an important part of the continuous improvement cycle (Hord, 2004). Furthermore, teachers in both schools have not utilized learning data sufficiently to inform their instructional decisions, which tend to be intuitive. A study Warmoes et al. (2024) describes this condition, explaining that without strong data utilization, PLC implementation has not been able to encourage continuous changes in learning practices. Structural obstacles such as teacher rotation, unfocused school policies, and suboptimal administrative support further reinforce the challenges of PLC implementation in schools. The effectiveness of PLC implementation, therefore, depends on the availability of time, the quality of reflection, the utilization of data, and the stability of the school's organizational structure (Alzayed & Alabdulkareem, 2021; Huijboom et al., 2023).

Schools need to improve their documentation and reflection mechanisms so that the professional learning process of teachers becomes more focused and systematic. Well-organized individual reflection journals and comprehensive follow-up documentation will help teachers review the effectiveness of the learning strategies that have been implemented, while also serving as a basis for developing the next steps for improvement. When learning data is used consistently, instructional decisions are no longer based on intuition but on accurate information. This condition has the potential to strengthen evidence-based learning practices, improve the quality of academic interventions, and reinforce the role of PLCs as forums for driving continuous improvement in learning quality.

PLC Implementation Strategy

The results of the SWOT and CSF analysis of PLC implementation at Tazkia Insani Elementary School produced three main strategies that are most relevant to the PLC objective of improving the effectiveness of the school learning community. The strategies were developed in accordance with the school's conditions and learning community objectives, enabling the school to leverage its strengths and opportunities to overcome obstacles in PLC implementation at the school in order to improve teachers' pedagogical competencies. The intervention strategies were developed into work programs, activity forms, success indicators, and monitoring and evaluation for each strategy.

Table 6. PLC Implementation Strategy

Strategy	Program	Type of Activity	Success Indicators	Monitoring and Evaluation
Utilizing collaboration among teachers as a mandatory mentoring and knowledge transfer system to accelerate the adaptation of new teachers. (S2, T1)	Mentoring & Knowledge Transfer Program ● Formation of Mentoring Pairs (1 mentor: 1–2 new teachers). ● Setting a weekly mentoring schedule for the first 2 months.	● Observation of senior teachers' classes. ● Assistance in preparing lesson plans and student worksheets. ● Structured pedagogical discussion sessions. ● Joint microteaching.	● New teachers can design lesson plans and student worksheets that align with school standards. ● New teachers adapt more quickly (within 2 months). ● There is increased participation of new teachers in PLC.	● Mentor assistance observation sheet. ● Monthly reflection sessions with mentors and mentees.
Using an open culture to proactively present reports on the positive impact of PLC as evidence of performance, maintaining trust and support for the Foundation's policies (S3, T2)	*Open Impact Reporting Program* ● Preparation of quarterly PLC Impact Reports. ● Presentation of PLC impact to the Foundation twice a year. ● Documentation of follow-up actions from reports..	● Analysis of student data (grades, portfolios, progress notes). ● Creation of infographics on the impact of PLC. ● Internal and external dissemination sessions.	● The foundation provides ongoing support to PLC. ● There are no reductions in PLC facilities or schedules. ● Increased stakeholder confidence in school performance.	● Review of reports by the principal. ● Written feedback from the Foundation.
Utilizing ICT facilities to filter, compare, and process external training materials to suit the needs and quality standards of the school. (S1, T3)	ICT-Based External Training Material Curation Program ● Screening of at least 3 external training materials per month. ● Adjustment of materials to school learning quality standards	● Download, review, and filter external training materials. ● Compare content with school quality standards. ● Compile summaries in digital format (shared folder).	● Teachers receive relevant, high-quality materials. ● Training materials are used in PLCs and classroom practice. ● Teachers report increased understanding through written reflections.	● Audit the content of the material bank every two months. ● Survey teacher satisfaction with the training material.

The three intervention strategies developed in this study are strongly aligned with the key principles of the Professional Learning Community (PLC) theory. According to Dufour (2016), PLCs are effective when schools build a consistent collaborative culture that is oriented toward improving learning and based on the use of evidence and data. Strategies to strengthen collaboration, such as mentoring systems and direct knowledge transfer, support the collaborative culture dimension of PLCs, where teachers learn from each other's experiences, accelerate the adaptation of new teachers, and build reflective practices together. From a competency theory perspective, as stated by Spencer & Spencer (1993) competency is a fundamental characteristic consisting of knowledge, skills, and attitudes that influence performance. The following three strategies help teachers to develop their professional knowledge and skills through collaborative learning, evidence-based accountability, and the use of technology (Boyatzis, 2008; Patrick, 2022).

These three strategies also support the development of teachers' pedagogical competencies as stipulated in Regulation of the Director General of Teachers and Education Personnel of the Ministry of Education, Culture, Research, and Technology Number 2626/B/HK.04.01/2023. Mentoring and collaboration strategies among teachers strengthen their ability to understand student characteristics and design appropriate learning activities. (Rhew et al., 2025). The implementation of an open culture in presenting impact reports encourages teachers to conduct assessments, analyze learning outcomes, and follow up on learning more systematically, thereby improving the quality of learning decision-making (Tarling & Gunness, 2021). The use of ICT to filter and process external training materials enriches teachers' mastery of learning methods and strategies, while also improving teachers' competence in digital-based learning. (Camacho et al., 2024). Thus, these three strategies not only strengthen the implementation of PLC, but also contribute directly to the comprehensive improvement of teachers' professional and pedagogical competencies (Bentri & Hidayati, 2022; Yadav et al., 2025).

If these three strategies are implemented consistently, the implementation of PLC in schools will develop into a more solid and sustainable professional learning system. The strategy of strengthening collaboration through mentoring and knowledge transfer will accelerate the equal distribution of teacher capacity, especially for new teachers who need rapid pedagogical adaptation (Verástegui Martínez et al., 2024). An open culture of presenting impact reports helps teachers improve evidence-based accountability, so that every learning decision has a strong foundation (Naidu & Karunanayaka, 2024). The use of ICT as a means of filtering and processing external training materials also enables teachers to update their professional knowledge more quickly and efficiently (Ngao et al., 2022). If these strategies are implemented simultaneously, schools have the opportunity to build a PLC ecosystem that can comprehensively improve pedagogical competence and strengthen the quality of classroom learning.

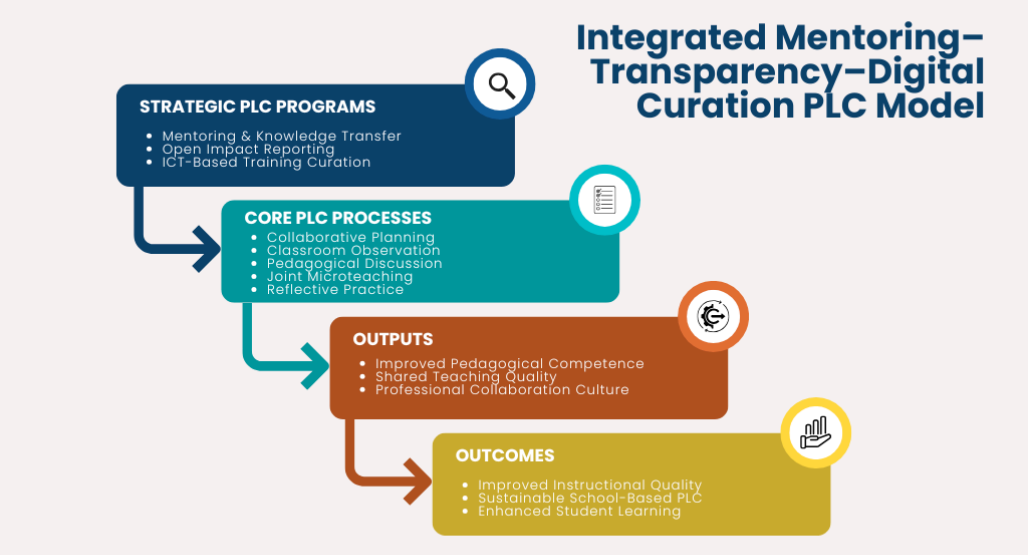

Figure 3. Integrated Mentoring-Transparency-Digital Curation PLC Model

Mentoring-Transparency-Digital Curation PLC Model

Integrated Mentoring–Transparency–Digital Curation PLC Model, which is a conceptual model for implementing Professional Learning Communities (PLCs) that is designed systematically and incrementally to improve the quality of learning in elementary schools. This model shows a causal flow that begins with Strategic PLC Programs as the foundation for school policy and strategic intervention. At this stage, PLC is operationalized through three main programs, namely Mentoring & Knowledge Transfer, Open Impact Reporting, and ICT-Based Training Curation. These three programs serve as a strategic framework that ensures the professional development of teachers is targeted, transparent, and based on the use of digital learning resources.

The strategic program was then implemented through Core PLC Processes, which reflect core PLC practices at the operational level. These processes include collaborative planning, classroom observation, structured pedagogical discussions, joint microteaching, and continuous reflective practice. This stage emphasizes that teacher competency development is not individual, but collective and peer-based. Furthermore, the implementation of the core PLC processes produces outputs in the form of improved teacher pedagogical competencies, more uniform teaching quality, and a stronger culture of professional collaboration within the school environment. These outputs are positioned as medium-term achievements that can be directly observed in teacher learning practices.

In the final stage, the model produces the following long-term outcomes: an improvement in overall learning quality; the sustainability of school-based professional learning communities (PLCs); and an indirect impact in the form of improved student learning outcomes. Thus, the model confirms the linear, integrative relationship between strategic policies, collaborative teacher processes, professional development outcomes, and learning impacts. Conceptually, this model strengthens the theoretical foundation of PLCs, emphasizing a focus on learning, professional collaboration, and data-based reflection. It is also a relevant implemented framework for PLCs in the context of digital transformation in primary schools (Dufour et al., 2016; Hord, 2004).

CONCLUSION

SWOT and CSF analyses provide an overview of the most relevant intervention strategies for improving teachers' pedagogical competencies through PLC implementation. The most relevant strategies for implementing PLCs in line with school conditions and PLC objectives are: mentoring programmes; knowledge transfer between teachers to accelerate the adaptation of new teachers; open impact reporting programmes, involving the preparation of quarterly PLC impact reports; and external ICT-based training material curation programmes, to adjust materials to school learning quality standards. Schools need to establish internal policies regarding the PLC schedule as a priority in the academic calendar and be overseen by school management to maintain the routine and continuity of PLC. Schools also need to develop a standardized documentation system, including reflection journals, discussion minutes, and follow-up documents, by providing standard formats and ensuring that teachers use them consistently to facilitate the monitoring and evaluation process. In addition, schools should prepare technological support, including ICT devices and access to digital training materials, so that teachers can process learning data and update their pedagogical knowledge more efficiently. The Education Office needs to strengthen formal policies on the implementation of PLC through the issuance of technical regulations, implementation guidelines, and evaluation mechanisms that ensure PLC is practiced systematically at the school level.

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