

Principals' Efficacy and Effectiveness in Fostering Professional Learning Communities (PLCs) in Bhutanese Secondary Schools

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Abstract

This study examined the role of school principals in fostering Professional Learning Communities (PLCs) and promoting teacher collaboration in Bhutanese secondary schools. Employing a concurrent mixed-methods design, the study administered a structured survey questionnaire and structured interview questions to a purposively selected sample of 67 participants comprising 13 principals and 54 teachers. Two scales, a PLC Leadership Scale and a Collaboration Scale, were used to collect quantitative data, both demonstrating excellent internal consistency ($\alpha = 0.948$ and $\alpha = 0.931$, respectively). Descriptive statistics revealed high mean perceptions of both principal PLC leadership ($M = 4.397$, $SD = 0.560$) and teacher collaboration ($M = 4.381$, $SD = 0.495$). Pearson's correlation analysis revealed a strong positive relationship between principal PLC leadership and teacher collaboration ($r = 0.810$, $p < .001$), explaining approximately 65.6% of shared variance between the two constructs. The findings highlight the centrality of principal leadership in cultivating collaborative professional cultures and offer practical and policy-relevant insights for school improvement in the Bhutanese context and beyond.

KEYWORDS

professional learning communities; principal leadership; teacher collaboration; school improvement, mixed-methods research, Bhutan

Introduction

Educational leadership is critical to increasing teaching quality and student learning outcomes. The creation of Professional Learning Communities (PLCs) is a well-known strategy for improving teacher professional development and school improvement. PLCs place a strong emphasis on teacher collaboration, shared accountability, reflective dialogue, and continuous professional development (DuFour & DuFour, 2016). Teachers can assess instructional strategies, share ideas, and enhance instructional practices as a community through these collaborative practices (Ikpuri & Peter, 2024).

According to DuFour (2004a, 2004b), a professional learning community is a group of educators who collaborate and work consistently to enhance teaching practices and student learning outcomes. PLCs foster an environment that supports teachers' professional development through group inquiry, shared leadership, and reflective practice (Liu & Hallinger, 2026). School principals play a critical role in promoting PLCs by shaping school culture, providing leadership support, and facilitating teacher collaboration. Effective school leadership has a substantial impact on student outcomes, teacher collaboration, and instructional development (Day et al., 2016). PLC approaches in schools can be

strengthened by principals who promote collaboration, confidence, and shared decision-making.

Studies also suggest that leadership practices such as instructional supervision, facilitating professional dialogue, and providing structural support influence the success of PLCs. Principals, in particular, serve as facilitators who direct teachers' collaborative learning processes ([Darling-Hammond et al., 2017](#)). Although PLCs are becoming increasingly popular in educational systems worldwide, school leadership practices often determine how well they are implemented. Strong PLC cultures can be hindered by factors such as hierarchical school systems, limited time for collaboration, and a lack of leadership support ([Hairon & Dimmock, 2012](#)).

Despite this body of research, most existing PLC studies have examined outcomes such as teaching quality or student achievement, with comparatively little attention paid to how principals' own assessments of their PLC leadership compare with teachers' lived experiences of that leadership. In the Bhutanese context specifically, prior work ([Wangmo & Tshering, 2021](#)) has focused on the impact of PLC participation on teacher effectiveness and student learning, but has not examined whether principals and teachers hold convergent or divergent perceptions of principal PLC leadership itself. This study addresses that gap by directly comparing principal and teacher perceptions, thereby contributing new, context-specific evidence on the principal–teacher perceptual dynamic within Bhutanese secondary schools. Therefore, this study seeks to examine the extent to which principals foster the culture of Professional Learning Communities in schools, with a particular focus on their influence on teacher collaboration and professional learning.

Research Objectives

1. To examine the influence of principals on the development of Professional Learning Communities in schools.
2. To explore the impact of principals on the culture of collaboration among teachers.

Literature Review

Professional Learning Communities in Schools

Professional Learning Communities have become an important strategy for enhancing school performance and teachers' professional development. PLCs encourage teachers to engage in ongoing professional development through collaboration, reflection, and accountability for student outcomes ([DuFour, 2014](#)). Teachers collaborate in PLCs to examine student data, exchange instructional techniques, and consider teaching methods.

According to research, collaborative learning environments can greatly enhance both teacher professional development and teaching efficacy ([Owen, 2014](#)). Teachers can also reflect on their approaches

and learn from colleagues through collaborative professional learning activities, including peer discussions and professional learning rounds ([Mansfield & Thompson, 2017](#)).

Additionally, teachers who engage in professional learning activities improve their teaching methods and expand their professional knowledge ([Mohan et al., 2017](#)).

Role of Principals in Professional Learning Communities

School principals play an important role in establishing and maintaining PLCs ([Bouchamma et al., 2019](#)). Teachers' collaboration, knowledge sharing, and professional development inside schools are all impacted by leadership practices ([Khasawneh et al., 2023](#)). According to research, PLC cultures are strengthened by administrators who foster collaboration and supportive school environments ([Buttram & Farley-Ripple, 2016](#)).

Additionally, Buttram & Farley-Ripple (2016) indicates that principals' perceptions of their own effectiveness in leadership and supervision can positively influence how well PLCs operate in schools. Collaborative learning is facilitated by effective leaders who promote professional development programs, encourage teacher participation, and offer advice ([Hord, 1997](#)).

Further, it has been demonstrated that leadership approaches that integrate transformational and instructional leadership enhance student outcomes and teacher learning ([Day et al., 2016](#)).

Leadership and Teacher Collaboration

One of the most important aspects of successful PLCs is teacher collaboration. When teachers work together regularly, they exchange ideas, evaluate their methods, and collaborate to overcome classroom obstacles ([Darling-Hammond et al., 2017](#); [Vescio et al., 2008](#)). To foster this collaborative culture, leadership is essential ([DuFour, 2004a](#); [Paletta & Alimehmeti, 2026](#)).

According to research, teachers' opinions of PLC characteristics and collaborative behaviours are greatly influenced by school leadership ([Vanblaere & Devos, 2016](#)). The growth of PLCs in schools has also been demonstrated to be positively correlated with school leadership ([Somprach et al., 2017](#)).

Additionally, teachers' confidence in their capacity to enhance student learning is strengthened by collaborative professional learning, which helps to increase teacher collective efficacy ([Voelkel Jr. & Chrispeels, 2017](#)). Recent studies further indicate that professional learning and collaboration within schools are influenced by both teacher-related and school-related factors ([Savaş & Demirkasimoğlu, 2024](#)).

In the Bhutanese context, research suggests that PLC practices can improve teachers' effectiveness and enhance student learning outcomes when supported by collaborative professional environments ([Wangmo & Tshering, 2021](#)).

Figure 1. Conceptual framework depicting the relationship between principal leadership, PLC development, and teacher collaboration



Conceptual Framework

The concept that school leadership influences the growth and efficacy of Professional Learning Communities (PLCs) within schools serves as the foundation for this research. Principals have a crucial role in creating the conditions for teachers to interact, engage in professional conversation, and participate in collective learning (Bandura, 2000; DuFour, 2004b). In accordance with research, effective principal leadership significantly enhances the development of PLC characteristics such as shared vision, teamwork, and collective responsibility (Buttram & Farley-Ripple, 2016). The functioning of PLCs in schools can be strengthened by principals who provide instructional support, promote collaboration, and provide opportunities for professional development (Bouchamma et al., 2019).

Besides, effective PLC practices promote teachers' collaboration, sharing of instructional strategies, and self-reflection, all of which improve collective teacher efficacy and professional learning (DuFour, 2014). Likewise, studies indicate that collaborative cultures in schools and teachers' participation in professional development activities are influenced by leadership practices (Day et al., 2016). As a result, principal leadership is seen as a crucial element that influences how PLC culture develops and fosters collaboration between teachers and professional growth. (See [Figure 1](#)).

Research questions

R1: To what extent do principals foster the culture of a Professional Learning Community in schools?

R2: How do principals promote teacher collaboration through PLC practices?

Methods

Research Design

This study employed a concurrent mixed-methods research design, integrating quantitative and qualitative methods to provide a comprehensive understanding of principals' roles in promoting Professional Learning Communities (PLCs). The mixed-methods approach was deemed appropriate given the complexity of the research problem, as it enabled triangulation of findings from different data sources, thereby enhancing the validity and depth of interpretation (Creswell & Poth, 2025). The quantitative strand measured principals' and teachers' perceptions of PLC practices and principal leadership using a structured survey instrument, while the qualitative strand provided deeper contextual insight into leadership strategies and collaborative activities within schools through structured interview questions. By integrating both approaches concurrently, the study was able to generate both breadth and depth of understanding, with the qualitative data serving to contextualise and illuminate the patterns identified through quantitative analysis.

Participants

The study was conducted across schools in Bhutan. The participant group comprised two categories, a school principals and classroom teachers. Principals were included as key informants given their direct role in shaping school leadership, resource allocation, and the institutional conditions necessary for PLC development. Teachers, who constitute the primary beneficiaries and active participants of PLC activities, were included to

provide perspectives on the quality of collaborative culture and the extent to which principal leadership has facilitated professional learning in their schools. In total, 67 participants took part in the study, comprising 13 school principals (19.4%) and 54 teachers (80.6%). This composition reflects a realistic distribution of roles in a school setting and ensures that both leadership and classroom-level perspectives were adequately represented in the data. Participants were recruited from 13 schools across 20 districts. The inclusion criteria required principals to have served in their current post for at least one year and teachers to have at least one year of teaching experience at the school, ensuring familiarity with school-level PLC practices. Teachers will provide perspectives on collaboration and PLC practices, while principals will provide insights into leadership strategies used to promote PLCs.

Sampling Technique

Purposive sampling was employed to select participants for this study. This non-probability sampling technique was considered appropriate given the study's focus on the specific experiences of individuals directly involved in school leadership and professional learning activities (Voelkel Jr. & Chrispeels, 2017). Participants were selected based on their professional roles, as either school principals or classroom teachers, ensuring that those with direct and relevant knowledge of PLC practices and collaborative school culture were included. This approach was consistent with the qualitative dimension of the study, which sought in-depth, context-specific insight rather than broad statistical representativeness. Purposive sampling was considered adequate for the quantitative and inferential components of the study as well, because the population of school principals available across the participating schools was itself limited, making the sample close to a census of accessible principals rather than a probability draw from a larger pool. This constrains the statistical generalisability of the inferential results, a limitation that is addressed further below.

Data Collection Methods

Survey Questionnaire

A structured survey questionnaire was administered to both principals and teachers as the primary quantitative data collection instrument. The PLC Leadership Scale and Collaboration Scale were developed based on a review of the PLC and educational leadership literature (DuFour, 2004a; Hord, 1997), with items constructed to reflect the key dimensions of principal PLC leadership and teacher collaboration identified in this body of work, such as shared vision, collaborative learning, structural support, and shared professional inquiry. Prior to the main data collection, the draft questionnaire was reviewed by a small number of selected principals and teachers who were not part of the main study sample. Their feedback was used to check the clarity, relevance, and face validity of the items within the Bhutanese school context, and minor wording revisions were made accordingly before the instrument was finalised and administered. The reliability of the revised instrument was then assessed using Cronbach's alpha.

The questionnaire comprised two sections, each corresponding to one of the study's key constructs. The first section, the PLC Leadership Scale (Questions 1–10), measured participants' perceptions of principals' influence on PLCs, encompassing dimensions such as the facilitation of shared vision, promotion of collaborative learning, and provision of structural and material support. The second section, the Collaboration Scale (Questions 11–20),

assessed the level of teacher collaboration and PLC culture within the school, including the frequency of collaborative activities, joint planning, and shared professional inquiry. All items were presented on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), allowing for quantification and comparison of perceptual ratings across both participant groups. Before data collection, the reliability of both scales was established through Cronbach's alpha analysis, yielding excellent internal consistency for the PLC Leadership Scale ($\alpha = 0.948$) and the Collaboration Scale ($\alpha = 0.931$).

Structured Interview Questions

To complement and enrich the quantitative data, structured interview questions were administered to selected principals and teachers. Although the interviews followed a structured format, ensuring consistency of questioning across participants, the open-ended nature of the questions allowed for expansive and context-specific responses that could not be captured through the survey alone. The interview protocol comprised five questions designed to explore: how principals support PLC development in their schools; the strategies used by principals to promote teacher collaboration; the challenges that impede effective PLC implementation; the perceived influence of PLC activities on teaching and learning outcomes; and participants' recommendations for strengthening PLC practices and collaborative culture in schools. Responses were audio-recorded, transcribed, and subsequently subjected to thematic analysis, through which initial codes were generated and consolidated into overarching themes. This iterative process of coding and theme identification followed the framework outlined by Braun & Clarke, (2021) ensuring rigour and transparency in the qualitative analytical process(OECD, 1998).

Data analysis

The quantitative data collected through the survey questionnaire were analysed using JASP, a free open-source statistical software developed and maintained by University of Amsterdam researchers. Descriptive statistical techniques, including frequencies, percentages, means, and standard deviations, were employed to summarise participants' responses and identify patterns related to principals' influence on Professional Learning Communities (PLCs) and teacher collaboration practices. Where appropriate, inferential statistical analyses were conducted to examine relationships and differences between variables, thereby providing a deeper understanding of the factors associated with PLC implementation and leadership effectiveness. Before conducting between-group comparisons, the assumptions of normality and homogeneity of variance were assessed for both scales. Shapiro-Wilk tests in Table 1 indicated a significant departure from normality for both PLC Leadership ($W = 0.910$, $p < .001$) and Collaboration ($W = 0.928$, $p < .001$). Levene's test in Table 2 indicated a significant violation of the equal-variance assumption for PLC Leadership ($F(1, 65) = 4.928$, $p = .030$) but not for Collaboration ($F(1, 65) = 0.067$, $p = .797$). Given the violation of both assumptions for PLC Leadership, Welch's t-test is reported in place of Student's t-test for that comparison; Student's t-test is retained for Collaboration, as only normality (and not variance homogeneity) was violated.

The qualitative data obtained from the structured interviews were analysed using thematic analysis (Creswell & Poth, 2025). The responses were then systematically coded to identify meaningful patterns and

recurring ideas. Similar codes were grouped into broader categories, from which key themes were developed.

Table 1. Test of Normality (Shapiro-Wilk)

Residuals	W	p
PLC_Leadership	0.910	< .001
Collaboration	0.928	< .001

Note. Significant results suggest a deviation from normality.

Table 2. Test of Equality of Variances (Levene's)

	F	df ₁	df ₂	p
PLC_Leadership	4.928	1	65	.030
Collaboration	0.067	1	65	.797

The thematic analysis enabled the researcher to explore participants' perspectives on principals' leadership practices, collaborative activities, challenges, and the overall role of Professional Learning Communities in supporting teacher professional growth. The integration of quantitative and qualitative findings facilitated a comprehensive interpretation of the research questions and enhanced the credibility of the study.

Ethical Approval

All participants were informed of the study's purpose, procedures, and their right to withdraw at any time without consequence, and provided written informed consent before participation. Participant responses were anonymised, and confidentiality of individual identities and school affiliations was maintained throughout data collection, analysis, and reporting.

Result and Discussion

Findings

Demographic Profile of Participants.

A total of 67 participants (see Table 3) took part in this study. Among them, 13 were school principals (19.4%) and 54 were teachers (80.6%), reflecting a realistic distribution of roles in a school setting. With regards to gender, the sample was predominantly male (74.6%, $n = 50$) compared to female (25.4%, $n = 17$). In terms of professional experience, the majority of participants (62.7%, $n = 42$) had more than 15 years of teaching or leadership experience, followed by those with 11–15 years (14.9%, $n = 10$), 5–10 years (13.4%, $n = 9$), and less than 5 years (9.0%, $n = 6$). The high proportion of experienced educators in the sample strengthens the credibility of the data, as participants were well-positioned to offer informed perspectives on PLC practices and principal leadership.

Internal consistency was assessed using Cronbach's alpha (α) for both scales (see Table 4 and Table 5). The PLC Leadership Scale (Q1–Q10) yielded $\alpha = 0.948$ (95% CI [0.926, 0.969]), and the Collaboration Scale (Q11–Q20) yielded $\alpha = 0.931$ (95% CI [0.905, 0.956]). Both values exceed the conventionally accepted threshold of 0.70 and fall within the excellent range ($\alpha > 0.90$), indicating that both scales demonstrate strong internal consistency and are reliable measures of the constructs under investigation. These reliability coefficients provide confidence that the survey items consistently measured the intended constructs across respondents.

PLC Leadership and Collaboration

Note. The minimum and maximum values reported in

Tables 6 and Table 7 are composite (mean item) scores averaged across the ten items comprising each scale, rather than raw single-item Likert ratings; this is why the reported extremes (e.g., 2.554) are non-integer.

As shown in Tables 5 and 6, composite scores were computed for both the PLC Leadership and Collaboration scales. On a 5-point Likert scale, the PLC Leadership Score yielded a mean of 4.397 (SD = 0.560, Min = 2.554, Max = 4.954, N = 67), and the Collaboration Score had a mean of 4.381 (SD = 0.495, Min = 3.131, Max = 4.931, N = 67). Both composite scores are situated in the upper range of the scale, indicating that participants generally held highly favourable perceptions of both principal PLC leadership and the level of teacher collaboration in their schools. The relatively small standard deviations suggest moderate consensus among respondents, with limited variability in perceptions across the sample. The near-equivalent means for both constructs provide an early indication of a substantive relationship between the two variables.

Perceptual Differences Between Principals and Teachers

Levene's test (see Table 2) for equality of variances showed that the assumption of homogeneity of variance was violated for PLC Leadership, $F(1, 65) = 4.928$, $p = .030$, but not for Collaboration, $F(1, 65) = 0.067$, $p = .797$. Therefore, the Welch t-test was used (See Table 8) to interpret the results for PLC Leadership, while the standard Student's t-test was retained for Collaboration. For PLC Leadership, the Welch t-test indicated a statistically significant difference between the two groups, $t(32.95) = -3.379$, $p = .002$. This finding suggests that the two groups differed significantly in their perceptions of principal leadership in fostering professional learning communities.

For Collaboration, the independent samples t-test showed no statistically significant difference between the groups, $t(65) = -1.485$, $p = .142$. The Welch test produced

a similar conclusion, $t(17.92) = -1.463$, $p = .161$, indicating that perceptions of collaboration did not differ significantly between the groups.

Correlation Between PLC Leadership and Collaboration

Pearson's correlation analysis revealed a strong positive and statistically significant relationship (see Table 9) between PLC Leadership and Collaboration ($r = 0.810$, $p < .001$). This indicates that higher perceptions of principal PLC leadership are strongly associated with higher levels of perceived teacher collaboration. According to Cohen, (2013) the classification, a correlation of $r = 0.810$ constitutes a large effect, explaining approximately 65.6% of the shared variance between the two constructs. This finding is the most salient quantitative result of the study. It provides robust evidence that the quality of principal leadership in fostering PLCs is strongly associated with the collaborative culture that develops among teachers within a school (Basque et al., 2025).

High Perceptions of PLC Leadership and Collaboration

The high mean scores observed for both PLC Leadership ($M = 4.397$) and Collaboration ($M = 4.381$) indicate that participants perceived principals as being largely effective in promoting PLC practices and fostering a collaborative school culture. These findings are consistent with broader research suggesting that supportive and instructionally engaged principals create conditions that facilitate structured teacher collaboration and professional development (Bouchamma et al., 2019; Lomos et al., 2025). In the Bhutanese educational context, this aligns with findings from Wangmo and Tshering (2021), who noted that PLC practices supported by collaborative environments can enhance teacher effectiveness and improve student learning outcomes. The results thus affirm that the principals participating in this study are largely fulfilling their role as architects of a collaborative professional culture within their schools (DuFour, 2014).

Table 3. Demographic Characteristics of Participants (N = 67)

Variable	Category	Frequency	Percentage (%)
Position	Principal	13	19.4
	Teacher	54	80.6
Gender	Male	50	74.6
	Female	17	25.4
Experience	Less than 5 years	6	9.0
	5–10 years	9	13.4
	11–15 years	10	14.9
	More than 15 years	42	62.7

Note. N = 67. Percentages may not total exactly 100 due to rounding.

Table 4. PLC Leadership Scale (Q1–Q10)

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.948	0.011	0.926	0.969

Table 5. Collaboration Scale (Q11–Q20)

			95% CI	
Coefficient	Estimate	Std. Error	Lower	Upper
Coefficient α	0.931	0.013	0.905	0.956

Table 6. PLC Leadership Score

	Collaboration
Valid	67
Missing	0
Mean	4.381
Std. Deviation	0.495
Minimum	3.131
Maximum	4.931

Table 7. Collaboration Score

	PLC Leadership
Valid	67
Missing	0
Mean	4.397
Std. Deviation	0.560
Minimum	2.554
Maximum	4.954

Table 8. Perceptions of principals and teachers on both scales

Variable	Test Used	t	df	p	Interpretation
PLC Leadership	Welch's t-test	-3.379	32.95	.002	Significant difference
Collaboration	Student's t-test	-1.485	65.00	.142	No significant difference

Table 9. Correlation

		Pearson's r	p
PLC_Leadership	- Collaboration	0.810	< .001

Table 10. Frequency of Themes by Participant Group

Question	Theme	Principals (n = 13)	Teachers (n = 54)	Total (N = 67)	% of Participants
Q1. Principal support for PLCs	Professional development	5	13	18	26.9%
	Encouragement and motivation	4	11	15	22.4%
	Resource and time allocation	2	10	12	17.9%
	Supportive learning environment	3	11	14	20.9%
Q2. Encouraging collaboration	Structured collaboration activities	4	29	33	49.3%
	Sharing ideas and practices	1	8	9	13.4%
	Leadership support and guidance	3	4	7	10.4%
	Recognition and appreciation	0	1	1	1.5%
Q3. Challenges to PLC implementation	Time constraints	8	30	38	56.7%
	Resource limitations	4	13	17	25.4%
	Heavy workload	1	10	11	16.4%
	Participation and commitment issues	0	2	2	3.0%
Q4. Influence of PLCs on teaching and learning	Improved teaching practices	3	23	26	38.8%
	Professional growth	2	4	6	9.0%
	Improved student outcomes	2	5	7	10.4%
	Increased teacher collaboration	1	5	6	9.0%
Q5. Recommendations for strengthening PLCs	More time for PLC activities	3	13	16	23.9%

Additional professional	3	12	15	22.4%
development Increased resources and	3	4	7	10.4%
infrastructure Strengthening collaborative	1	5	6	9.0%
culture				

The qualitative dataset (54 teachers and 13 principals; N = 67) used the participant coding (Position 1 = Teachers; Position 2 = Principals).

Perceptual Differences: The Principal–Teacher Gap

The statistically significant difference found between principals and teachers on PLC Leadership perceptions ($p = .018$, Cohen's $d = -0.748$) is a noteworthy finding that warrants careful interpretation. Principals rated their own PLC leadership practices significantly more positively than teachers did. This perceptual discrepancy may reflect a natural self-assessment bias on the part of school leaders, who may overestimate the reach and effectiveness of their leadership actions. Such a pattern resonates with findings by Bouchamma et al. (2019), who reported that principals' self-efficacy beliefs regarding their supervision practices in PLC contexts did not always align with teachers' experiences on the ground. Similarly, Buttram & Farley-Ripple (2016) found that principals shape PLC implementation primarily through their own beliefs and perceptions of their effectiveness, which may not always be shared by teachers.

The medium-to-large effect size ($d = 0.748$) further underscores the practical significance of this gap, suggesting that principals may need to engage in more reflective and dialogic leadership practices grounded in teacher feedback. The non-significant difference on Collaboration ($p = .142$) suggests that both groups share more aligned views on the collaborative climate within schools, even if their assessments of principal leadership diverge.

The Strong Link Between Leadership and Collaboration

The most compelling finding of this study is the strong positive correlation between PLC Leadership and Collaboration ($r = 0.810$, $p < .001$). This large effect size confirms that principal leadership in PLC development is not merely incidental to collaborative culture but is substantially intertwined with it. When principals actively invest in building PLC structures by fostering shared vision, creating opportunities for structured professional dialogue, and promoting distributed leadership, teachers are significantly more likely to engage in meaningful collaboration (Borko et al., 2010; Louis & Marks, 1998). This finding corroborates the theoretical framework underpinning this study and aligns with a broad body of empirical evidence. Vanblaere & Devos (2016) demonstrated through multilevel analysis that both transformational and instructional leadership are positively associated with PLC characteristics such as collective responsibility and reflective dialogue.

Somprach et al. (2017) similarly found, a positive relationship was found between school leadership and PLC development in Thai schools. In the Bhutanese context, where hierarchical school systems and limited structural support may present barriers (Wangmo & Tshering, 2021) to PLC implementation (Hairon & Dimmock, 2012), the strong correlation observed here suggests that where principals do invest in PLC leadership, teachers respond with higher levels of collaboration. This underscores the centrality of principal agency in overcoming contextual constraints (Fullan, 2016; Hord, 1997). Furthermore, the finding reinforces the proposition of Savaş & Demirkasımoğlu (2024) that

instructional leadership practices by principals create a positive learning climate that in turn promotes teacher professional engagement. Collectively, the data suggest that the quality of principal leadership in PLC promotion is a decisive factor in shaping the collaborative professional culture of a school.

Qualitative Findings: Thematic Analysis

Structured questionnaire data were analysed using thematic analysis, following a process of initial coding and theme consolidation. Five interview questions generated rich qualitative data across five thematic areas, as discussed below.

Principal Support for Professional Learning Communities

Responses to Question 1 ("In what ways does the principal support PLCs in your school?") generated four sub-themes: Professional Development Support, Resource and Structural Support, Encouragement and Motivation, and Supportive Learning Environment. Participants frequently described principals as organising workshops and training sessions, and creating formal opportunities for teachers to engage in learning. As one respondent noted, principals "conduct workshops and trainings" and "provide opportunities for teachers to learn," reflecting a clear orientation toward professional development. Structurally, principals were reported to allocate dedicated time for PLC meetings and furnish teaching resources, demonstrating commitment to building the institutional scaffolding necessary for PLCs to function. Additionally, participants highlighted the motivational role of principals, describing how they "encourage teachers to participate" and "support innovative teaching practices." These findings suggest that effective PLC leadership in this context operates across multiple dimensions: logistical, motivational, and pedagogical, consistent with the multi-faceted leadership model (Battal & Demirkasımoğlu, 2025; Buttram & Farley-Ripple, 2016).

How Principals Encourage Teacher Collaboration

Question 2 ("How does the principal encourage collaboration among teachers?") revealed four themes: Structured Collaboration, Collaborative Culture, Supportive Leadership, and Motivation and Recognition. Participants described principals as taking concrete steps to institutionalise collaboration, including conducting regular staff meetings and facilitating departmental discussions. This structural scaffolding was complemented by a cultural dimension, wherein principals encouraged the sharing of ideas and the promotion of teamwork. The recognition of teachers' efforts emerged as a distinct motivational mechanism, with participants noting that acknowledgement of contributions reinforced teachers' commitment to collaborative activities. These findings align with research by Vanblaere and Devos (2016), who found that both transformational and instructional leadership contribute to reflective dialogue and collective responsibility within PLCs. The dual emphasis on structured opportunities and an affirming school culture reflects the kind of layered leadership approach documented by Day et al. (2016).

Challenges to PLC Implementation

Question 3 ("What challenges affect the implementation of PLCs in your school?") produced four themes: Time Constraints, Workload Challenges, Resource Limitations, and Participation and Commitment Issues. Time constraints emerged as the most frequently cited barrier to PLC implementation, being reported by 8 of the 13 principals (61.5%) and 30 of the 54 teachers (55.6%), representing 56.7% of all participants (see [Table 10](#)).

Resource limitations constituted the second most common challenge and were identified (see [table 10](#)) by 4 principals (30.8%) and 13 teachers (24.1%). A notable finding was the identification of teacher disengagement and a lack of cooperation as significant participatory barriers, suggesting that the challenge of PLC implementation is not solely structural but also cultural and attitudinal. These qualitative insights complement and deepen the quantitative findings, helping explain the contextual conditions under which the principal–collaboration relationship operates. They are also consistent with prior research identifying time, resource scarcity, and hierarchical school cultures as key barriers to PLC sustainability ([Hairon & Dimmock, 2012](#)).

Influence of PLC Activities on Teaching and Learning

Question 4 ("How have PLC activities influenced teaching and learning in your school?") generated four sub-themes: Improved Teaching Practices, Professional Growth, Improved Student Outcomes, and Enhanced Collegial Collaboration. Participants attributed a range of positive outcomes to PLC engagement. At the instructional level, teachers reported improvements in teaching strategies and enhanced classroom instruction. At the professional level, participants described gains in pedagogical knowledge and the acquisition of new teaching approaches, reflecting the kind of skill development that PLC frameworks are designed to promote ([Mohan et al., 2017](#); [Owen, 2014](#)).

The impact on student outcomes was also noted, with participants observing improved student performance as a downstream benefit. Significantly, greater collaboration among teachers was itself identified as a valued outcome, suggesting a reinforcing cycle in which PLC activities strengthen the collaborative capacity that, in turn, sustains PLC engagement. These outcomes provide qualitative validation of the quantitative finding that higher PLC leadership is associated with stronger teacher collaboration ([Admiraal et al., 2021](#)).

Recommendations for Strengthening PLC Practices

Question 5 ("What suggestions would you recommend to strengthen PLC practices and teacher collaboration in schools?") yielded three overarching recommendation themes: Increased Time Allocation, Enhanced Professional Development, and Resource Enhancement and Strengthening Collaborative Culture. Participants most frequently recommended reducing teachers' workload and providing dedicated time for PLC activities, directly addressing the time constraints identified as barriers. The call for more workshops and targeted professional development underscores teachers' appetite for structured learning opportunities.

Resource enhancement — including increased budget allocation and provision of teaching materials — was also strongly recommended. At the cultural level, participants advocated for the promotion of teamwork and the creation of opportunities for knowledge sharing, signalling a desire for a more deeply embedded collaborative culture rather

than merely procedural compliance. These recommendations provide practical direction for school administrators and policymakers seeking to strengthen PLC implementation in Bhutanese schools.

Suggestions

Based on the findings of this study, the following suggestions are offered for school leaders, policymakers, and educational practitioners seeking to strengthen PLCs in Bhutanese schools. First, school principals should be provided with targeted leadership development programmes that equip them with the skills to build reflective, teacher-centred PLC cultures. Given the perceptual gap identified between principals' self-assessments and teachers' evaluations of PLC leadership ($p = .018$), ongoing feedback mechanisms, such as 360-degree appraisals or structured teacher voice surveys, should be institutionalised to help principals calibrate their leadership practices against teacher's lived experiences.

Second, the Ministry of Education and school administrations should prioritise the structural conditions for PLC success by embedding dedicated, protected time for PLC meetings into the school timetable, thereby addressing the time constraints identified as the most persistent barrier to participation. Third, adequate budget allocation for professional development workshops, teaching resources, and collaborative tools is essential; policy interventions should ensure that resourcing for PLC activities is equitable across schools.

Fourth, cultivating a genuinely collaborative school culture requires sustained effort beyond procedural compliance. Principals should actively foster norms of trust, mutual respect, and shared professional responsibility, and celebrate collaborative achievements to sustain teacher motivation. Finally, given that the qualitative findings affirm that PLC participation yields tangible improvements in teaching quality and student outcomes, the case for sustained institutional investment in PLCs is compelling; future policy frameworks should explicitly position PLC development as a core component of school improvement strategy.

Limitations

Several limitations should be acknowledged when interpreting the findings of this study. First, the sample was drawn from a relatively small number of schools using purposive sampling, which limits the generalisability of findings to other schools or regions within Bhutan. Second, the study relied primarily on self-reported survey data and interview responses, which are susceptible to social desirability bias, participants may have responded in ways they perceived to be favorable rather than reflecting actual practices. Third, the significant underrepresentation of female respondents (25.4%) may limit the extent to which the findings capture gendered experiences of PLC leadership and collaboration.

Fourth, while the quantitative data reveal a strong association between principal leadership and teacher collaboration, the cross-sectional design of the study does not permit causal inferences. Longitudinal research would be needed to determine whether improvements in principal PLC leadership practices over time lead to corresponding improvements in teacher collaboration. Finally, the qualitative component was based on brief interview responses, and deeper ethnographic or observational methods may yield richer insights into the lived experience of PLC implementation in Bhutanese schools.

Conclusion

This mixed-methods study examined the extent to which principals foster the culture of Professional Learning Communities in schools, with particular attention to their influence on teacher collaboration and professional learning. The findings provide compelling and convergent evidence that principal leadership is significantly associated with PLC culture and teacher collaboration in Bhutanese schools.

The quantitative analysis revealed high mean perceptions of both PLC leadership ($M = 4.397$) and teacher collaboration ($M = 4.381$), alongside a strong and statistically significant positive correlation between the two constructs ($r = 0.810$, $p < .001$). A significant perceptual gap between principals and teachers on PLC leadership ($p = .018$, $d = -0.748$) indicates that while principals hold highly positive self-assessments of their leadership, teachers evaluate this leadership somewhat less favourably, a finding that points to the need for more responsive and feedback-informed leadership practice. The qualitative thematic analysis further illuminated these dynamics, identifying how principals support PLCs through professional development, structural provision, and motivational leadership; how they promote collaboration through structured meetings, idea-sharing, and recognition; and how persistent challenges of time, workload, and resource constraints continue to limit PLC potential.

Taken together, these findings affirm that principals who actively invest in PLC leadership by building shared visions, creating collaborative structures, providing resources, and motivating teachers significantly shape the quality of professional learning and collegial culture in their schools. The study contributes to the growing body of evidence on school leadership and PLCs in non-Western educational contexts, and adds a distinctly Bhutanese perspective to an internationally relevant discourse. Future research should explore causal mechanisms through longitudinal designs, expand sampling to include a broader range of schools and districts, and investigate the role of gender and school level as moderating variables in the principal–PLC relationship.

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For Bhutanese education policymakers, these findings point to a concrete, actionable step by formally embedding protected, timetabled PLC meeting time within the school's scheduling guidelines would directly address the most persistent barrier identified by participants and could narrow the principal–teacher perceptual gap by giving both groups a shared, visible structure through which to enact and evaluate PLC leadership.

Author contributions

Kinzang Tshewang conceptualized and designed the study, conducted the literature review, developed the research instruments, collected the data, performed the quantitative and qualitative analyses, interpreted the findings, and prepared the original manuscript draft. The author reviewed and approved the final version of the manuscript and accepts responsibility for the integrity and accuracy of all aspects of the work.

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Conflict of interest

The author declares that there are no conflicts of interest regarding the publication of this paper. The authors have no financial, professional, or personal relationships that could have influenced the work reported in this study.

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