An Analysis of Ghanaian Teachers' Perceptions of the Context, Processes, and Contents of Professional Learning Communities.

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ABSTRACT

Professional Learning Communities (PLCs) have gained global recognition as effective models of teacher professional development. However, in many African contexts, including Ghana, their implementation remains uneven due to contextual barriers such as limited resources, inconsistent leadership support, and fragmented professional development structures. This study examined Ghanaian teachers' perceptions of the context, processes, and contents of PLCs in basic and senior high schools, with the goal of identifying enablers, challenges, and implications for effective teacher development. A quantitative design was employed, using a structured questionnaire administered to a stratified random sample of 200 teachers across diverse regions and school levels. The instrument demonstrated high internal reliability (Cronbach's alpha = 0.943). Data were analyzed using descriptive statistics, t-tests, and ANOVA to explore differences in teacher perceptions across demographic and contextual variables. Findings revealed that teachers perceived leadership, time, and school culture relatively consistently across schools, while resource availability significantly differentiated PLC experiences ($F(4, 90) = 2.863$, $p = .028$). Process-related components such as collaboration and shared practice were broadly valued, though reflective dialogue showed variability. Significant differences were also observed in perceptions of instructional practice ($F(4, 90) = 2.922$, $p = .025$) and student learning focus ($F(4, 90) = 2.725$, $p = .034$) across subject areas, suggesting uneven impact of PLCs by content domain. Ghanaian teachers generally view PLCs positively, recognizing their value for collaboration and instructional improvement. However, disparities in resource distribution, weak reflective practices, and subject-specific variations highlight the need for differentiated and context-sensitive PLC models. Policymakers and school leaders should prioritize equitable resourcing, facilitator training, and tailored PLC structures to strengthen sustainable teacher professional development.

Keywords- Professional Learning Communities (PLCs), Teacher Perceptions, Ghana, Teacher Collaboration, Instructional Practice, Educational Reform

INTRODUCTION

In today's rapidly changing educational environment, there is a global consensus that effective professional development for teachers must move beyond isolated workshops and embrace ongoing, collaborative models of learning. One of the most impactful approaches that have gained international traction is the Professional Learning Community (PLC) model *(*OECD, 2020). A Professional Learning Community (PLC) is typically defined as a group of educators who collaborate routinely, share expertise, and collectively strive to enhance instructional practices and student learning outcomes (OECD, 2020. The central premise of PLCs is that sustainable school improvement occurs when teachers continuously learn and reflect together on teaching practices, analyze student data, and develop strategies tailored to learner needs.

Globally, education systems in developed countries have integrated Professional Learning Communities (PLCs) as a central feature of school improvement initiatives. In the United States, the focus on collaborative professional learning is reinforced through policies like the Every Student Succeeds Act (ESSA), which promotes sustained teacher development as a pathway to student achievement (OECD, 2020; DarlingHammond, Hyler, & Gardner, 2017). In countries like Australia and Canada, contemporary educational leadership frameworks emphasize the institutionalization of Professional Learning Communities (PLCs) as a core element of school

improvement strategies. Recent international studies have demonstrated that wellestablished PLCs contribute significantly to enhanced teaching quality, greater teacher confidence, and improved student learning outcomes (Darling-Hammond, Hyler, & Gardner, 2017; OECD, 2020). These benefits arise because PLCs offer educators a collaborative and adaptive space to critically reflect on practice, examine student work, and implement data-driven, evidence-based instructional approaches.

In Africa, efforts to promote PLCs have grown steadily in response to the need for contextually relevant, school-based professional development. However, the implementation of PLCs in African countries often faces significant challenges related to policy, leadership, infrastructure, and teacher workload. In South Africa, although the Department of Basic Education officially encourages the formation of subject-based Professional Learning Communities (PLCs), their effectiveness is often undermined by weak implementation structures, minimal teacher engagement, and insufficient institutional support for sustained collaboration (UNESCO, 2022*)*. Similarly, in countries such as Kenya and Nigeria, Professional Learning Communities (PLCs) have often been introduced through donor-supported education projects, international non-governmental organizations (NGOs), and teacher resource centers. While these initiatives have succeeded in raising awareness of collaborative professional development practices, their long-term impact has been limited by a lack of national policy integration, inconsistent funding, and minimal institutional support. In many cases, PLCs are perceived as externally driven and temporary, rather than embedded within national teacher development frameworks (UNESCO, 2022; *OECD, 2020)*. The absence of strong government ownership, coupled with inadequate incentives for teacher participation, has raised concerns about sustainability and scalability (Tournier & Chimier, 2020; Darling-Hammond, Hyler, & Gardner, 2017). Without consistent follow-up mechanisms, training support, and alignment with school leadership priorities, these externally initiated PLC models often fail to gain long-term traction within school systems.

Furthermore, in many African educational systems, school environments continue to reflect deeply embedded hierarchical structures that restrict teacher autonomy, diminish peer-to-peer collaboration, and discourage open professional dialogue. Although teachers across the continent often demonstrate a willingness to collaborate, meaningful engagement in Professional Learning Communities (PLCs) is frequently hindered by systemic constraints such as overcrowded classrooms, inflexible teaching schedules, and a lack of school-wide cultures that support continuous learning and shared inquiry *(UNESCO, 2022)*. These structural and cultural barriers have led scholars and international education bodies to advocate for the development of more contextsensitive, culturally responsive Professional Learning Community models. Such models should account for the socio-economic conditions of African schools, while actively promoting teacher-led initiatives, distributed leadership, and locally relevant professional development practices (Darling-Hammond, Hyler, & Gardner, 2017).

In Ghana, the Ministry of Education and Ghana Education Service (GES) have recognized the importance of continuous professional development and collaborative practice through key reforms such as the National Teachers' Standards (2017), the Pre-Tertiary Teacher Professional Development and Management (PTPDM) policy, and the National Teacher Education Curriculum Framework (NTECF). These policy frameworks emphasize school-based support systems, peer collaboration, and reflective practice. However, the operationalization of PLCs remains fragmented and inconsistent. While some basic and senior high school especially those supported by NGOs or international education programs engage in structured collaborative learning activities, many Ghanaian schools still rely on traditional, workshop-based teacher training (Amoako & Essel, 2019). Teachers in Ghana face a range of contextual barriers that affect the development of effective PLCs. These include insufficient time allocated for collaboration, limited understanding of the PLC model, lack of training in facilitation and reflective practices, and inconsistent administrative support (Adu-Yeboah, 2022). Additionally, many school leaders are not adequately prepared to foster a culture of trust, shared leadership, and continuous inquiry and key elements of successful PLCs (Boateng & Sarpong, 2020). In rural areas, the situation is more constrained due to teacher shortages, infrastructural challenges, and professional isolation. Importantly, the success of PLCs hinges not only on structural conditions but also on teachers' perceptions and professional dispositions. Teachers' attitudes, beliefs, and understandings of the purpose and processes of PLCs play a critical role in shaping their engagement and commitment. If teachers view PLCs as externally imposed, time-consuming, or irrelevant, they may resist participation or engage superficially (Kennedy, 2014). Conversely, when teachers perceive PLCs as beneficial to their practice and student learning, they are more likely to take

ownership and sustain their involvement (Hord, 2004). In Ghana, studies on teacher perceptions remain limited, and there is a need to explore how teachers interpret the context (school environment and support), processes (collaboration, inquiry, reflection), and core components (shared vision, student focus, leadership) of PLCs within their unique educational settings.

Extensive mixed-methods research in Ghana highlights the considerable potential of Professional Learning Communities (PLCs) to enhance teacher collaboration, professional growth, and ultimately student learning outcomes. These studies, however, reveal persistent challenges that constrain PLC effectiveness, notably the limited time available for collaborative activities and inequities in participation across schools and teacher groups (Amoako et al., 2021). Policy reports emphasize the critical need to evaluate school-level implementation fidelity as the Ministry of Education, in partnership with organizations such as T-TEL, scales PLC initiatives nationwide. Such monitoring ensures that PLCs are not only implemented as intended but also achieve their goals of improving instructional quality and supporting equitable educational opportunities (GES/T-TEL, 2023). Pan-African reviews further highlight a lack of robust causal evidence connecting PLC participation to observable changes in teaching practices or student outcomes (Mitchell et al., 2024). This gap indicates that, while Professional Learning Communities are promising, their practical impact remains insufficiently verified, underscoring the necessity for rigorous evaluation and research that can establish causal linkages and identify the evidenced-based factors that influence effectiveness. In addition, the development of context-specific measurement instruments for assessing PLC quality and effectiveness remains underdeveloped, limiting the ability to benchmark and refine implementation strategies. Nonetheless, emerging initiatives in Ethiopia illustrate progress in designing locally relevant assessment tools, signaling potential pathways for improving PLC evaluation frameworks across African contexts (ScienceDirect, 2025).

The findings will offer evidence-based insights to guide school leaders, policymakers, teacher educators, and other stakeholders in designing and supporting PLCs that are not only structurally sound but also culturally relevant and professionally meaningful. As Ghana continues to pursue education quality and equity through teacher development reforms, a deeper understanding of teacher perceptions will be crucial to ensuring that PLCs move from policy rhetoric to effective practice.

Research Questions

1. How do Ghanaian teachers perceive the contextual factors (e.g., leadership support, school culture, policy environment) that influence the functioning of PLCs in their schools?

2. What are teachers' experiences and perceptions regarding the processes of collaboration, reflective practice, and shared decision-making within PLCs?

3. What are teachers' views on the core components of effective PLCs such as shared values, collective focus on student learning, continuous inquiry, and mutual accountability?

METHODOLOGY

Research Design

This study adopted a quantitative research design to examine teachers' perceptions of the context, processes, and core components of Professional Learning Communities (PLCs). The quantitative approach was selected to enable the collection and analysis of measurable data from a broad sample of teachers, allowing for generalizations across different school contexts. Data were gathered through the administration of a structured questionnaire designed to capture participants' views on key dimensions of Professional Learning Communities, including collaboration, shared leadership, inquiry, reflection, and student-focused practices. The questionnaire was distributed to a representative sample of teachers across various regions, school types, and levels (basic and senior high), ensuring diversity in responses.

The collected data were subjected to statistical analysis to identify significant trends, patterns, and relationships. Descriptive statistics (such as frequencies and percentages) were used to summarize teachers' overall

perceptions, while inferential statistics (such as t-tests, ANOVA, and correlation analysis) were applied to examine differences and associations based on variables like gender, teaching experience, school location, and educational level.

Population and Sample

The target population for this study comprised Public Basic and Senior High School teachers working across selected regions in Ghana. Teachers at these educational levels were deliberately chosen because they play a pivotal role in implementing school-based professional development initiatives such as Professional Learning Communities (PLCs)**.** At these levels, teachers are expected to engage in reflective practice, collaborative learning, and instructional improvement core elements / content of PLCs that directly support the goals of Ghana's Pre-Tertiary Teacher Professional Development and Management (PTPDM**)** policy and broader efforts toward achieving Sustainable Development Goal 4, particularly Target 4.c, which focuses on enhancing the quality of teacher training and ongoing development (MoE, 2019).

To ensure broad representativeness, the study employed a stratified random sampling technique. The teacher population was stratified by geographic location (Urban Versus Rural), school level (Basic versus Senior High), and other demographic variables such as years of teaching experience and professional rank. Within each stratum, teachers were randomly selected to reduce selection bias and to capture a wide range of perspectives across different educational and socio-professional contexts. A statistically adequate sample size of approximately 150 to 200 teachers was determined based on power analysis to allow for robust quantitative analysis, including reliability testing, and comparative statistical procedures. This sample size also made it possible to conduct subgroup analyses to examine how contextual variables influence teachers' perceptions and engagement in PLCs.

Data Collection Instrument

Data for this study were collected using a structured questionnaire, specifically developed and validated to assess teachers' perceptions of Professional Learning Communities (PLCs) in the Ghanaian educational context. The instrument was grounded in widely recognized frameworks on PLC implementation and schoolbased teacher collaboration (DuFour et al., 2010; Hord, 2004), and items were adapted from existing tools used in similar studies to ensure both content validity and cultural relevance. The questionnaire was designed to capture multiple dimensions of teachers' perceptions, including the contextual enablers and barriers to PLCs, the collaborative processes within schools, and the core components such as shared vision, collective responsibility, and reflective inquiry.

The survey consisted of a combination of Likert-scale items, closed-ended questions, and demographic items. The Likert items were used to gauge the extent of agreement with statements about PLC practices, school culture, leadership support, and perceived effectiveness of collaboration. Closed-ended questions helped assess the frequency of participation in PLC-related activities, while demographic questions gathered background information such as teaching level, years of experience, professional rank, school location, and gender. This information facilitated subgroup analyses based on contextual and personal characteristics.

Although a paper-based version was prepared for schools with limited internet access, most responses were collected through a digitally administered survey, compatible with mobile devices, laptops, and desktops. This approach ensured broader reach and reduced the logistical challenges of accessing teachers across multiple regions. The choice of a digital platform was influenced by increased digital literacy and access among Ghanaian teachers, especially those in urban and peri-urban schools (Ghana Statistical Service, 2021).

Data Collection Procedure

Data collection for this study was systematically carried out over a six-week period to ensure sufficient time for reaching a geographically diverse group of teachers across selected public basic and senior high schools in

Ghana. The research process began with formal engagement and collaboration with key stakeholders, including the Ghana Education Service (GES)**,** district education offices, and individual school heads. This collaboration

was essential for securing access to schools, facilitating institutional approval, and creating smooth communication pathways with prospective participants.

To distribute the survey efficiently, both digital and physical methods were employed. For schools with adequate internet connectivity, the survey link was shared via widely used platforms such as school official WhatsApp groups for staff, and institutional Google Classrooms where available. In schools with limited or no digital access especially in rural settings paper-based questionnaires were delivered in person with the support of school heads or designated teacher coordinators. This hybrid approach ensured inclusivity and improved participation rates across different regions.

To enhance response rates and minimize non-response bias, the researcher implemented a structured follow-up strategy. Weekly reminders either digital or in-person were issued to encourage timely participation among teachers who had not yet responded. This process was conducted respectfully and in coordination with school authorities to avoid disrupting teaching schedules.

Reliability and Validity

In social science research, reliability refers to the degree to which an instrument consistently measures a concept without producing random error. Bless and Higson-Smith (2000) explains that a reliable instrument will generate stable and consistent results when applied to the same population under similar conditions. In the context of this study, reliability was crucial to ensuring that the responses accurately reflected teachers' perceptions regarding the context, processes, and key components of Professional Learning Communities (PLCs).

To assess internal reliability, data from all 91 questionnaire items were entered into the Statistical Package for the Social Sciences (SPSS) software. A Cronbach's Alpha analysis was conducted to determine the internal consistency of the items used to measure the constructs under investigation.

The resulting Cronbach's Alpha coefficient of 0.943 (see Table 1) indicates excellent reliability, as values above 0.9 are generally considered highly dependable (Field, 2018). This suggests that the items were wellaligned and measured the underlying constructs in a consistent manner across respondents. The high level of internal consistency further confirms that the instrument was appropriately designed to explore the multiple dimensions of PLCs in the Ghanaian educational context.

Cronbach's Alpha	N of Items
.943	91

Table 1: Overall instrument reliability statistics

Data Analysis

The data collected through the structured questionnaire were systematically coded and entered into the Statistical Package for the Social Sciences (SPSS) version 25 for thorough and organized analysis. Prior to conducting any statistical tests, the dataset was rigorously screened to ensure completeness, accuracy, and internal consistency. Responses that were incomplete, duplicated, or identified as outliers were excluded during the data cleaning process to preserve the integrity and validity of the results. This preliminary step helped guarantee that only high-quality data were used in the final analysis.

To address the research objective of examining teachers' perceptions of Professional Learning Communities (PLCs), both descriptive and inferential statistical techniques were employed. Descriptive statistics including means, standard deviations, frequencies, and percentages were calculated to summarize the demographic characteristics of participants. These included gender, years of teaching experience, school type (basic or senior high), and geographical location (urban or rural). Descriptive measures were also used to capture overall trends in teacher perceptions across the study's core constructs: contextual conditions (e.g., leadership support and time availability), collaborative processes (e.g., teamwork, peer learning), and core components of PLCs (e.g., shared

vision, collective inquiry, and continuous improvement). These summaries provided a foundational understanding of how PLCs are experienced across various educational settings in Ghana.

In addition to descriptive analyses, inferential statistical tests were used to explore significant differences and relationships among variables. Independent samples t-tests were conducted to compare mean perception scores between two groups such as male and female teachers, or urban and rural school staff on various aspects of PLC implementation and perceived effectiveness. For comparisons across more than two groups, One-Way Analysis of Variance (ANOVA) was employed. This was particularly useful for examining differences based on teaching experience, school level, and regional location. Where statistically significant results emerged, post hoc analyses (such as Tukey's HSD test) were carried out to determine which specific groups differed significantly from each other. These inferential techniques allowed the study to assess whether contextual and demographic factors influenced teachers' perceptions of PLCs, helping to identify disparities and implementation gaps that may exist within the current system.

All statistical tests were conducted at a significance level of 0.05. Where applicable, effect sizes were also calculated and reported alongside p-values to assess not only statistical significance but also the practical relevance of the findings. This combination of descriptive and inferential analyses ensured a robust interpretation of how Ghanaian teachers perceive the enablers, challenges, and outcomes associated with Professional Learning Communities. The comprehensive analytical approach supports the study's broader aim of generating context-specific insights that can inform educational leadership, guide policy development, and strengthen PLC practices as a sustainable model for ongoing teacher professional development in Ghana.

Ethical Considerations

This study strictly adhered to established ethical principles to protect the rights, dignity, and well-being of all participating teachers. Before initiating the data collection process, ethical clearance was obtained from the appropriate review bodies, including the University's Institutional Review Board (IRB) and the Ghana Education Service (GES) Ethics Committee. These approvals confirmed that the research instruments, procedures, and overall study design complied with both international ethical standards and national regulatory requirements for conducting research involving human participants.

All participants were fully informed about the nature and purpose of the study, the procedures involved, and their rights as respondents. This information was shared clearly and accessibly to ensure that teachers understood that their participation was entirely voluntary and that they had the right to withdraw at any stage without any adverse consequences. The informed consent process was administered either electronically (in digital formats) or in writing (for in-person data collection), and participants were required to provide explicit acknowledgment of their consent before completing the survey or engaging in interviews. To maintain participant confidentiality and anonymity, all data collected were de-identified, ensuring that no personal or identifying information was linked to individual responses. Strict data protection measures were implemented, including the use of password-protected files, encrypted storage, and limited access to the data by authorized research personnel only. These precautions were taken to prevent unauthorized access, disclosure, or misuse of sensitive information.

Throughout the study, ethical practices were upheld in line with established research ethics frameworks, particularly regarding informed consent, privacy, and data protection (Israel & Hay, 2006). These efforts helped foster trust, respect, and transparency between the research team and participants, while reinforcing the study's credibility and adherence to academic integrity.

RESULTS ANALYSIS

Table 2 Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.

CONTEXT	.122	96	.001	.940	96	.000
PROCESS	.073	96	.200*	.970	96	.026
CONTENT	.102	96	.015	.939	96	.000
a. Lilliefors Significance Correction						
This is a lower bound of the true significance. This table is tests of Normality for Context, Process, and Content Source: Field Data (2025) *Key= Df1=degrees of freedom one, df2= degrees of freedom two, Sig =Significant Value,						

In Table above, the Shapiro-Wilk test results assess the normality of three variables: context, process, and content, each with a sample size of 96. The Shapiro-Wilk test evaluates the null hypothesis that the data is normally distributed; a significance value (p-value) greater than 0.05 suggests normality, while a p-value less than or equal to 0.05 indicates a significant deviation from normality. For the CONTEXT variable, the Shapiro-Wilk statistic is 0.940 with a p-value of 0.000. Since the p-value is less than 0.05, we reject the null hypothesis, indicating that the context data significantly deviates from a normal distribution.The process variable has a Shapiro-Wilk statistic of 0.970 and a p-value of 0.026. Although the statistic is close to 1, suggesting near-normality, the p-value is still below the 0.05 threshold. Therefore, we conclude that the process data also significantly deviates from normality. For the content variable, the shapiro-Wilk statistic is 0.939 with a p-value of 0.000. This p-value is well below 0.05, leading us to reject the null hypothesis and conclude that the content data is not normally distributed.

Research Question 1

The first research question asked teachers how does the context of a professional learning community affects the participants' perceptions during implementation process. Respondents answered questions specific to the four categories contained within the context grouping: leadership, time allocation, culture, and resources. Respondents answered questions on a Likert-type scale using a 5-point scale: 1 = strongly disagree, 2 = disagree, 3= uncertain, 4=agree, and 5= strongly agree. To examine research question 1, a one way ANOVA was calculated to assess whether there was significance in professional learning community implementation and teachers' perceptions of the context contained within the process. The resulting analysis is presented in Table 4.

Table 3: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Leadership	1.851	4	90	.126(ns)
Time	1.697	4	90	.158(ns)
Culture	1.024	4	90	.399(ns)
Resources	.045	4	90	.996(ns)

Source: Field Data (2025) *Significant difference exists at p≤0.001, n=96

Key= df1=degrees of freedom one, df2= degrees of freedom two, Sig-V =Significant Value, ns*=not significant

The Levene's Test of Homogeneity of Variances was conducted to determine whether the assumption of equal variances was met for the variables Leadership, Time, Culture, and Resource across the different contextual groups in the study. This assumption is critical for the validity of the one-way ANOVA, as unequal variances across groups can affect the accuracy of the F-statistic and lead to incorrect conclusions. The results indicated that the test was not statistically significant for any of the four variables: Leadership (Levene's F = 1.851, p = .126), Time (F = 1.697, p = .158), Culture (F = 1.024, p = .399), and Resource (F = 0.045, p = .996). All pvalues are greater than the commonly used significance level of 0.05, suggesting that the variances of the dependent variable are roughly equal across the groups being compared for each contextual factor. As a result, the null hypothesis of equal variances is retained for all four variables. This means that the data meet the assumption of homogeneity of variances, and it is statistically appropriate to proceed with the one-way ANOVA analyses to explore whether there are significant differences in the operation of Professional Learning Communities based on these contextual factors.

Table 4: Context ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
Leadership	Between Groups	81.091	4	20.273	.853	.495
	Within Groups	2137.898	90	23.754		
	Total	2218.989	94			
Time	Between Groups	18.315	4	4.579	.825	.512
	Within Groups	499.221	90	5.547		
	Total	517.537	94			
Culture	Between Groups	145.943	4	36.486	1.917	.114
	Within Groups	1712.688	90	19.030		
	Total	1858.632	94			
Resources	Between Groups	303.948	4	75.987	2.863	.028
	Within Groups	2388.957	90	26.544		
	Total	2692.905	94			

Source: Field Data (2025) *Significant difference exists at p≤0.001, n= 96 CI: 95%

Key= n*= sample Size, SM*=Sum of squares, Df*= degree of freedom,MS* = mean square, S*=significancevalue.

A one-way ANOVA was conducted to examine whether there were statistically significant differences in the operation of Professional Learning Communities (PLCs) across different contextual groups based on four process components: Leadership, Time, Culture, and Resource. For the Leadership component, the analysis revealed no statistically significant differences between the groups, F (4, 90) = 0.853, p = .495. This indicates that the level of leadership support perceived by participants did not differ significantly across the contextual categories. Similarly, for Time, the results were not significant, F (4, 90) = 0.825, p = .512, suggesting that teachers' perceptions of time availability for Professional Learning Community activities were consistent across the groups. The Culture component also showed no statistically significant difference, though the result was approaching significance, F (4, 90) = 1.917, p = .114. While not statistically conclusive, this may indicate a trend

toward differences in school culture regarding Professional Learning Community that could be explored further in future research. However, for the Resource component, the ANOVA yielded a statistically significant result, F (4, 90) = 2.863, p = .028. This suggests that perceptions of resource availability for supporting Professional Learning Communities varied significantly across the contextual groups. This finding implies that access to materials, funding, or other necessary resources is not uniformly distributed and may impact how Profession Learning Communities function in different school settings.

Research question 2

The second research question asked teachers how does the process of a professional learning community affects the participants' perceptions during implementation process. Respondents answered questions specific to the three categories contained within the process grouping: collective learning and inquiry, shared practice, reflection and feedback mechanism. Respondents answered questions on a Likert-type scale using a 5-point scale: 1 = strongly disagree, 2 = disagree, 3= uncertain, 4=agree, and 5= strongly agree. To examine research question 2, a one way ANOVA was calculated to assess whether there was significance in professional learning community implementation and teachers' perceptions of the context contained within the process. The resulting analysis is presented in Table 6

Table 5: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
COLLABORATIVE	.615	3	91	.607
SHARED	.800	3	91	.497
REFLECTION	.054	3	91	.983

Source: Field Data (2025) *Significant difference exists at p≤0.001, n=96, CI: 95%

Key= df1=degrees of freedom one, df2= degrees of freedom two, Sig-V =Significant Value

The Levene's Test of Homogeneity of Variances was performed to determine whether the assumption of equal variances was met for the variables Collaborative Practice, Shared Leadership, and Reflective Dialogue across the different groups in the study. This test is essential before conducting ANOVA, as it ensures that the variances in scores among the groups are not significantly different, which a key assumption for the validity of ANOVA results.

The test results showed that the assumption of homogeneity of variances was satisfied for all three variables. For Collaborative Practice, the Levene Statistic was 0.615 with a significance value of 0.607. For Shared Leadership, the Levene Statistic was 0.800 with a significance value of 0.497. Lastly, for Reflective Dialogue, the Levene Statistic was 0.054 with a significance value of 0.983. In each case, the p-value was greater than the standard significance threshold of 0.05, indicating no statistically significant differences in variances across the groups. Therefore, it can be concluded that the data meet the assumption of equal variances for all three variables. This means it is appropriate to proceed with one-way ANOVA tests to examine whether there are significant differences in these Professional Learning Community components across the contextual groupings.

Table 6: Results of Process ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
COLLABORATIVE	Between Groups	46.592	3	15.531	.397	.756
	Within Groups	3562.944	91	39.153		

	Total	3609.537	94			
SHARED	Between Groups	22.035	3	7.345	.314	.815
	Within Groups	2131.292	91	23.421		
	Total	2153.326	94			
REFLECTION	Between Groups	136.557	3	45.519	1.952	.127
	Within Groups	2121.590	91	23.314		
	Total	2258.147	94			

Source: Field Data (2025) *Significant difference exists at p≤0.001, n= 96 CI: 95%

Key= n*= sample Size, SM*=Sum of squares, Df*= degree of freedom,MS* = mean square, S*=significance-value.

A one-way ANOVA was used to find out whether there were any significant differences in how teachers perceive Collaborative Practice, Shared Leadership, and Reflective Dialogue three key elements of Professional Learning Communities (PLCs) based on different process-related groupings. The purpose was to see if the way PLCs are carried out affects teachers' experiences with these practices in Ghanaian Senior High Schools.

The results for Collaborative Practice showed no significant difference between the groups, $F(3, 91) = 0.397$, $p = .756$, meaning teachers viewed collaboration similarly regardless of the processes in place. The same was true for Shared practice, with no significant difference found, $F(3, 91) = 0.314$, $p = .815$, indicating that teachers generally experienced leadership sharing in a similar way across different process conditions. For Reflective feedback, the results were somewhat closer to being significant, $F(3, 91) = 1.952$, $p = .127$, but still did not reach the accepted level of significance. This means that, although there may be slight differences, they were not strong enough to confirm that process factors had a real impact on teachers' experiences with reflective practices. These findings show that the different ways Professional Learning Communities are implemented (process differences) do not significantly affect how teachers experience collaboration, shared practice, or reflection within their schools.

Research question 3

The third research question asked teachers how does the content of a professional learning community affects the participants' perceptions during implementation process. Respondents answered questions specific to the three categories contained within the context grouping: alignment with curriculum and instruction, relevance of class practice and focus on student learning and outcome. Respondents answered questions on a Likert-type scale using a 5-point scale: 1 = strongly disagree, 2 = disagree, 3= uncertain, 4=agree, and 5= strongly agree. To examine research question 1, a One way ANOVA was calculated to assess whether there was significance in professional learning community implementation and teachers' perceptions of the context contained within the content. The resulting analysis is presented in Table 8.

Table 7: Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
CURRICULUM	Welch	.880	4	40.974	.484
PRACTICE	Welch	2.188	4	38.847	.088

FOCUS	Welch	2.513	4	39.954	.057
a. Asymptotically F distributed.					

Source: Field Data (2025) *Significant difference exists at p≤0.001, n=96, CI: 95%

Key= df1=degrees of freedom one, df2= degrees of freedom two, Sig-V =Significant Value

A Welch's ANOVA was conducted to examine differences in teachers' perceptions of three Professional Learning Community (PLC) outcome variables Curriculum Alignment, Instructional Practice**,** and Student Learning Focus across different content groupings**.** This test was chosen due to prior violations of the assumption of equal variances for some of the variables. The results showed that there were no statistically significant differences in the means across the content groups. For Curriculum Alignment**,** Welch's F(4, 40.974) = 0.880, with a p-value of .484, indicating no meaningful variation in responses across groups. Similarly, Instructional Practice yielded Welch's F(4, 38.847) = 2.188, p = .088, which, although not statistically significant, approached the 0.05 threshold and may suggest a developing trend. For Student Learning Focus, Welch's F (4, 39.954) = 2.513, with a p-value of .057, also approached significance, indicating a possible difference in how this outcome is experienced across content groups. In summary, while none of the results were statistically significant, the near-significant findings for Instructional Practice and Student Learning Focus suggest that content-related differences may influence these areas and warrant further investigation.

Table 8: Results of Content ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
CURRICULUM	Between Groups	106.296	4	26.574	1.076	.373
	Within Groups	2222.694	90	24.697		
	Total	2328.989	94			
PRACTICE	Between Groups	525.675	4	131.419	2.922	.025
	Within Groups	4047.756	90	44.975		
	Total	4573.432	94			
FOCUS	Between Groups	254.856	4	63.714	2.725	.034
	Within Groups	2104.365	90	23.382		
	Total	2359.221	94			

Source: Field Data (2025) *Significant difference exists at p≤0.001, n= 96 CI: 95%

Key= n*= sample Size, SM*=Sum of squares, Df*= degree of freedom,MS* = mean square, S*=significance-value

A one-way ANOVA was conducted to explore whether teachers' perceptions of three key outcomes of Professional Learning Communities (PLCs) Curriculum Alignment, Instructional Practice, and Student Learning Focus varied significantly across different content areas in Ghanaian Senior High Schools. The results showed that for Curriculum Alignment, there was no statistically significant difference among the groups, F(4, 90) = 1.076, p = .373. This suggests that teachers, regardless of the subject area they teach (e.g., sciences, humanities, mathematics, etc.), generally perceived a similar level of alignment in curriculum content and goals within their respective PLCs. The consistency in perception implies that curriculum-related discussions and planning within PLCs may be implemented uniformly across departments.

However, for Instructional Practice, the analysis revealed a statistically significant difference between the content groups, $F(4, 90) = 2.922$, $p = .025$. This indicates that the way PLCs influence teachers' instructional approaches varies depending on the subject area. For instance, teachers in science or technical subjects may engage more actively in instructional strategy discussions or collaborative lesson planning compared to those in other disciplines. The variation may stem from differences in pedagogical demands, availability of teaching resources, or departmental leadership styles that shape how instructional collaboration is approached.

Similarly, the ANOVA for Student Learning Focus yielded a statistically significant result, $F(4, 90) = 2.725$, $p = .034$, indicating that emphasis on student-centered learning within PLCs is not consistent across content areas. Teachers in some subject areas may prioritize student performance data, learning outcomes, and differentiation strategies more than others within their collaborative work. These differences may reflect the varying nature of assessment, instructional objectives, or accountability structures tied to different subjects. While Curriculum Alignment appears to be uniformly experienced across content areas, both Instructional Practice and Student Learning Focus are significantly influenced by the content area in which teachers operate. These findings suggest that the effectiveness and implementation of PLCs are shaped not only by general school policies or structures but also by the specific characteristics and collaborative cultures within different subject departments. This insight underscores the need for tailored support and development strategies that account for the unique instructional needs of various content areas when strengthening Professional Learning Communities in Ghanaian Senior High Schools.

DISCUSSION

The findings of this study highlight the multifaceted and context-dependent nature of Professional Learning Community (PLC) implementation within senior high schools in Ghana. The quantitative data indicate that certain contextual factors, namely leadership support, availability of time, and overall school culture exert a relatively uniform influence across schools. This lack of significant variation may point to the influence of a centralized education policy framework or shared structural constraints that shape how PLCs are interpreted and enacted nationwide. However, the data also reveal a notable disparity in terms of resource availability, which emerged as a significant differentiator among schools. Variations in access to teaching and learning materials, digital infrastructure, and financial resources were found to substantially affect the ability of some schools to maintain and benefit from Professional L learning Community activities. This inequity has serious implications for the sustainability and effectiveness of PLCs, particularly in resource-constrained environments where collaborative practices may be limited or sporadic.

With regard to process-related dimensions such as teacher collaboration, shared leadership, and reflective practice, the findings suggest generally positive and consistent perceptions among participants. The absence of statistically significant differences across groups in these areas may indicate widespread acceptance of the value of these practices. However, the marginal significance observed for reflective practice may signal underlying issues, such as a lack of depth in professional dialogue or infrequent opportunities for meaningful feedback and self-assessment among teachers. Although collaboration and joint decision-making are broadly supported, the infrastructure and time required for sustained reflective engagement may be insufficient in many school settings.

Further insights emerged from the analysis of content-related variables. While curriculum alignment was perceived similarly across the board, significant differences were identified in teachers' views on instructional practices and their focus on student learning. These findings suggest that the implementation of PLCs varies by subject area, potentially due to differences in pedagogical approaches, department-level leadership, or access to subject-specific resources. For instance, departments such as General Science or Visual Arts, which often involve practical instruction, may naturally lend themselves to collaborative lesson planning and peer support. In contrast, subjects that lack standardized assessment frameworks may not benefit from the same level of structured collaboration. Taken together, these results underscore the need for more differentiated and contextsensitive Professional Learning Community models. Tailoring Professional Learning Communities strategies to the unique instructional requirements, resource conditions, and departmental cultures of specific subject areas could enhance both the relevance and impact of Professional Learning Communities within Ghana's senior high school system.

CONCLUSION

Based on the findings of this study, several important conclusions emerge. First, teachers generally demonstrate a positive disposition toward Professional Learning Communities (PLCs), recognizing their value for professional development and instructional enhancement. Core PLC practices such as collaboration, shared leadership, and inquiry are widely embraced, although the extent and depth of implementation vary across school settings. Despite this encouraging perception, the sustainability and overall effectiveness of Professional Learning Communities face systemic and structural challenges. These include inequitable access to resources, inconsistently developed reflective practices, and insufficient institutional support. The nearsignificant result for reflective practice, in particular, suggests that many schools lack the structured time and professional space needed for meaningful dialogue, peer feedback, and self-assessment. Furthermore, the findings underscore that Professional Learning Communities cannot be treated as a one-size-fits-all model. The way Professional Learning Communities function differs significantly across subject areas, indicating the need for differentiated approaches that reflect the unique pedagogical requirements, collaboration dynamics, and resource needs of each discipline. This reinforces the importance of context-sensitive and subject-responsive PLC models. In the case of Ghana and similar developing contexts, effective PLC implementation must consider both the socio-economic constraints of schools and the instructional characteristics of various academic departments. As such, this study contributes to the growing body of research advocating for localized and adaptive PLC frameworks that are grounded in the realities of the educational environment they seek to serve.

RECOMMENDATIONS

To begin with, there is an urgent need to enhance resource equity across schools. The Ministry of Education and the Ghana Education Service (GES) should prioritize the equitable distribution of teaching and learning resources, with particular focus on rural and under-resourced schools. The study found that disparities in access to materials, digital tools, and funding significantly affect the effectiveness and sustainability of Professional Learning Communities. Without the necessary infrastructure and resources, teachers in these schools are unable to fully participate in or benefit from collaborative professional development. Ensuring equitable resourcing will provide a foundation upon which meaningful PLC engagement can occur and be sustained over time.

Secondly, stakeholders should consider moving beyond the traditional "one-size-fits-all" model and instead foster subject-specific Professional Learning Communities structures. The findings revealed significant differences in how Professional Learning Communities operate across academic departments, suggesting that professional learning must be tailored to the distinct pedagogical requirements and collaborative needs of each subject area. Department-based Professional Learning Communities, for instance, can offer more focused and context-relevant discussions, allowing teachers to address discipline-specific challenges and share strategies that are directly applicable to their instructional practices. Such targeted collaboration would increase the relevance, engagement, and impact of Professional Learning Community initiatives.

In addition, the study recommends that schools make deliberate efforts to strengthen reflective practice mechanisms within Professional Learning Communities. Although collaboration and shared leadership are widely practiced, structured opportunities for reflection such as peer feedback sessions and collective inquiry remain underdeveloped. Embedding reflection into regular PLC activities will promote deeper learning and self-awareness among teachers. Training PLC facilitators in techniques for guiding reflective dialogue can enhance the quality of these engagements and ensure they go beyond surface-level discussions.

Furthermore, there is a pressing need for professional development focused on effective Professional Learning Community facilitation. School leaders, department heads, and PLC coordinators should be equipped with the skills necessary to manage and sustain Professional Learning Communities. This includes training in shared leadership, group dynamics, conflict resolution, and strategies for maintaining long-term teacher motivation. Such capacity building will ensure that Professional Learning Communities are not only well-organized but also adaptive and inclusive of diverse perspectives and experiences within the teaching staff.

The study also recommends the development of a robust monitoring and evaluation (M&E) framework for PLC implementation in Ghana. Without consistent assessment mechanisms, it is difficult to determine whether PLCs are functioning effectively or producing desired outcomes. An internal M&E system should be designed to evaluate the inclusiveness, consistency, and instructional impact of PLCs at the school and district levels. Insights generated from these evaluations can inform strategic adjustments, scale-up efforts, and policy-level decisions to improve the overall quality of professional development in the education system.

Lastly, future PLC models should seek to integrate diverse stakeholder perspectives into their design and implementation. While teacher input is central, the inclusion of voices from school heads, district education officers, and even students can provide a more holistic understanding of what effective professional collaboration should look like. A multi-stakeholder approach encourages shared responsibility, fosters innovation, and ensures that PLCs are responsive to the broader needs of the educational community they serve.

Implications of the Findings

The findings of this study provide important insights into how various contextual and content-related factors influence the operation and effectiveness of Professional Learning Communities (PLCs) in Ghanaian Senior High Schools. One key implication is that contextual factors such as leadership, time, school culture, and resource availability do not significantly differ across schools, suggesting a relatively uniform experience of PLC conditions. However, the significant differences found in resource availability highlight the importance of ensuring equitable distribution of teaching and learning resources, as unequal access may hinder the functioning of Professional Learning Community in some schools.

Furthermore, the results indicate that process components such as collaboration, shared leadership, and reflective practices are perceived similarly across schools. However, some emerging trends suggest that while collaboration and shared decision-making are valued, reflective practices may need further strengthening. Teachers generally perceive their Professional Learning Community environments as moderately to highly supportive, indicating a positive orientation toward professional collaboration. This points to a solid foundation upon which school leaders and policymakers can build to deepen Professional Learning Community engagement and impact.

Importantly, the significant differences in instructional practice and student learning focus across different content areas suggest that Professional Learning Community implementation is not equally effective across all subject departments. For example, teachers in certain subjects may have more structured collaboration, better alignment with instructional goals, or a stronger focus on student outcomes than others. These differences emphasize the need for subject-specific professional development and tailored PLC support. It also implies that a “one-size-fits-all” approach to Professional Learning Community development may not be effective, and school leaders should consider the unique needs and cultures of different departments when planning Professional Learning Community activities.

Limitations of the Study

While the study offers valuable insights, it is important to acknowledge its limitations. First, the research relied heavily on self-reported survey data, which can introduce response bias, such as social desirability or inaccurate self-assessment. Participants may have over- or under-reported their actual engagement in professional Learning community activities.

Second, the study was limited to a sample of selected Senior High Schools in Ghana, which may not fully represent the diverse experiences across the entire country. Regional disparities in resources, administrative support, or teacher training may influence the operation of Professional Learning communities (PLCs), and these may not have been fully captured in this study.

Lastly, the study focused primarily on teachers’ perceptions and did not include perspectives from school leaders, students, or educational officers, which could have provided a more holistic view of how professional Learning community function and their impact on teaching and learning.

Directions for Future Research

Building on the current findings, future research should aim to explore Professional Learning Community implementation using a mixed-methods approach that combines quantitative data with qualitative insights, such as interviews or focus group discussions. This would allow for a deeper understanding of how contextual and content-specific factors shape teacher collaboration and professional learning.

Moreover, future studies could expand the geographic scope to include a larger and more diverse sample of Senior High Schools across various regions of Ghana, including rural, urban, and peri-urban areas. This would improve generalizability and provide a more comprehensive picture of Professional Learning Community effectiveness nationwide.

It would also be beneficial to examine the role of school leadership more closely, including how principals and department heads support or hinder Professional Learning Community development. Longitudinal research could investigate how Professional Learning Community engagement evolves over time and whether it leads to measurable improvements in student learning outcomes.

Finally, future research should consider conducting post-hoc tests when significant differences are found in ANOVA to pinpoint exactly which groups differ. Additionally, integrating student performance data and classroom observations would help to validate self-reported data and provide a more objective measure of Professional Learning Communities impact.

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