

Learning Action Cell Modalities and Collaborative Practices: Effects to Professional Learning Outcomes Of Teachers and Academic Performance Of Key Stage 2 Learners

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Abstract — This study examined the effects of Learning Action Cell (LAC) modalities and collaborative practices on the professional learning outcomes of public elementary school teachers and the academic performance of Key Stage 2 learners in Ubay District, Bohol, during the School Year 2025–2026. Employing a quantitative research design with a descriptive-correlational approach, the study involved 400 teacher-respondents selected through purposive sampling. Data were gathered using a structured questionnaire measuring the extent of LAC implementation, demonstration of collaborative practices, and perceived professional learning outcomes, while learners' academic performance was assessed using first and second quarter average grades.

Results revealed that teachers perceived a high extent of implementation across face-to-face, online, and blended LAC modalities, with blended sessions showing the strongest engagement. Collaborative practices, including peer dialogue and knowledge sharing, problem-solving and mentoring, and reflective practice and teacher engagement, were also rated high, indicating active professional interactions that foster continuous development. Further analysis revealed a significant positive relationship between LAC modalities, collaborative practices, and teachers' professional learning outcomes. Moreover, higher levels of teacher competence, curriculum management, classroom management, and student discipline were associated with improved learner academic performance. We ethically addressed challenges such as time constraints, limited technological resources, and varying teacher readiness through voluntary participation and confidentiality measures.

The findings underscore the importance of structured LAC activities and collaborative engagement in enhancing teacher professional growth and learner outcomes. Based on these results, a professional development program was proposed, emphasizing flexible LAC modalities, mentoring, reflective practice, and capacity-building initiatives to sustain teacher improvement and academic excellence.

Keywords — *Learning Action Cell, Collaborative Practices, Teacher Professional Learning, Key Stage 2 Learners, Academic Performance*

I. Introduction

Professional learning continues to evolve as education systems worldwide adapt to new demands, emerging technologies, and diverse learner needs. Globally, collaborative professional development models—such as professional learning communities and peer-led coaching—have been shown to strengthen teacher competencies and improve student achievement. At the national level, the Department of Education institutionalized the Learning Action Cell (LAC) as the primary school-based in-service training model to promote collaboration, reflective practice, and continuous improvement among teachers.

Despite these initiatives, many schools still face challenges in maximizing LAC's potential. Variations in implementation, limited time, inconsistent participation, and lack of flexible modalities often hinder teachers from fully engaging in meaningful professional learning. In regions like Central Visayas, schools continue to navigate changing learning delivery demands, making it necessary to explore LAC approaches that are more adaptive, accessible, and responsive to teachers' real needs.

In the Ubay District of the Schools Division of Bohol, public elementary schools have been using different LAC modalities—face-to-face, online, and blended—yet the extent to which these modalities influence teachers' professional learning outcomes remains unclear. Reports of varying teacher competencies, uneven collaborative practices, and fluctuating academic performance among Grade 4 learners indicate the presence of a gap that must be examined. While existing data show improvement in some schools, others struggle with low mastery levels in English, science, and mathematics, suggesting the need to investigate whether strengthened or more flexible LAC implementation can help address these learning disparities.

This study seeks to determine how LAC modalities and collaborative practices affect both teacher professional learning outcomes and the academic performance of Grade 4 learners in Ubay District during the School Year 2025–2026. Understanding these relationships will provide evidence-based insights that will guide the development of a responsive and needs-based professional development program tailored to the district's context.

Literature Review

This review is organized into Conceptual Literature (theories, frameworks, and legal/policy basis) and Research Literature (empirical studies, recent theses/dissertations, and published research) to provide both a conceptual anchor and evidence-based context for the present study on flexible Learning Action Cell (LAC) modalities and their effects on teacher professional learning and student achievement.

Conceptual Literature

The notion of professional learning that is collaborative, reflective, and contextually responsive has long been supported by foundational theories such as Communities of Practice, Adult Learning Theory, Social Constructivism, and Self-Determination Theory. More recently, in an era of rapid digital transformation and shifts in teaching modalities, these theories have been revisited and adapted to support flexible, blended, and technology-mediated professional development structures.

For instance, a 2023 meta-analysis comparing online, blended, flipped, and traditional instruction for in-service teachers concluded that blended approaches significantly improved teachers' self-efficacy and were superior to purely classroom-based instruction. Similarly, the transition toward blended or online professional learning communities aligns with constructs derived from adult learning theory, self-efficacy theory, social learning theory, and organizational learning theory—offering a theoretically robust rationale for flexible LAC modalities.

Below is a (non-exhaustive) list of key frameworks and concepts supporting flexible, collaborative, and technology-enhanced professional learning, relevant to this study:

Framework / Theory / Concept Relevance to Flexible LACs / Professional Learning

Communities of Practice (e.g., Wenger, 1998) The framework emphasizes learning through shared practice, dialogue, and community, which is analogous to teacher collaboration in LACs. Learning Theory (e.g., Knowles) highlights that adult learners are autonomous and learn best when content is relevant to their experience—supporting designing teacher-centered LAC sessions. Constructivism & Zone of Proximal Development (e.g., Vygotsky) suggest that learning is socially mediated; peer collaboration and mentoring in LACs scaffold teacher learning. Self-Efficacy Theory (e.g., Bandura) indicates that mastery experiences, modeling, and positive feedback increase teachers' belief in their competence—LACs provide those experiences. Self-Determination Theory (Deci & Ryan) supports that autonomy, competence, and relatedness foster intrinsic motivation—key in flexible and collaborative LACs. Learning Organization Theory (e.g., Senge): Schools as organizations benefit from continuous shared learning and collective vision—LAC institutionalization fosters that. Diffusion of Innovations Theory (e.g., Rogers) explains how new pedagogical practices (like blended LACs) can spread in a system—helping frame scaling up flexible LAC modalities. Implementation Science (e.g., Fixsen et al., 2005) highlights fidelity, adaptation, and sustainability—crucial for ensuring flexible LAC practices are sustained in varying school contexts. 21st-Century Skills Frameworks (e.g., P21) emphasize critical thinking, collaboration, and digital literacy—LACs aligned with these can improve teacher readiness for modern teaching demands. Equity & Access Frameworks (e.g., OECD frameworks for PD access) Flexible modalities (online/blended LACs) address equity issues—enabling remote, under-resourced, or geographically isolated teachers to participate. Reflective and collaborative participation in LACs supports teachers' professional identity development, commitment, and growth, according to Teacher Professional Identity/Professional

Growth Models (e.g., Beijaard, Meijer, & Verloop). Ethical and evidence-based practice frameworks (e.g., Sachs) ensure that professional development (such as LACs) is grounded in data, reflective ethics, and continuous improvement.

Beyond theoretical frameworks, there is also a strong policy and regulatory basis for school-based, systematic professional learning in the Philippines. For example, national policies mandate school-based professional development structures and align teacher competencies with standardized frameworks—offering a formal foundation for institutionalizing LACs as sustainable professional learning communities.

Collectively, the conceptual literature supports the idea that LACs—when designed flexibly, collaboratively, and reflectively, with opportunities for digital integration—can function as powerful, sustainable mechanisms to enhance teacher competence, stimulate instructional innovation, and address equity in access to professional learning. This theoretical base provides a sound justification for investigating the effectiveness of flexible LAC modalities in the current study.

Research Literature (Empirical Evidence & Recent Studies)

Empirical research over the past five years provides growing support for flexible, blended, and school-based professional learning via LACs, PLCs, and other collaborative models, as well as highlighting challenges, enabling factors, and outcomes in terms of teacher competence, instructional practices, and even student engagement. Below is a synthesis of salient findings from recent studies—local and international—with attention to commonalities and gaps relative to the present research.

Recent research conducted in Philippine contexts shows that LAC sessions remain a viable in-house professional development strategy. For instance, a 2025 study by Vega and Orleans found that LAC implementation in elementary schools contributed to improved pedagogical skills, teaching methodologies, and assessment practices. Another study focusing on science teachers in Ilocos Sur demonstrated that high utilization of LAC session content led to improved subject-matter knowledge, pedagogy, assessment strategies, and contextualization of curriculum—suggesting that LACs foster inclusive teaching practices and responsiveness to learners’ diversity. Similarly, a descriptive-correlational study of junior and senior high school teachers in Bukidnon (School Year 2023–2024) examined teaching-learning skills and teacher performance to inform LAC training designs; results demonstrate the potential of well-designed LAC sessions to enhance competence across teaching dimensions.

During the shift to remote and blended learning caused by the COVID-19 pandemic, flexible professional learning communities gained prominence. A 2022–2023 study on teacher experiences in blended learning in Tagaytay City highlighted initial reluctance due to low digital readiness and lack of skills but emphasized that blended learning pushed teachers to adapt and eventually improved their capacity to deliver instruction under new modalities. Moreover, a 2023–

2024 study on collaborative learning environments in Bukidnon showed a strong positive correlation between collaborative environments and digital pedagogy practices, indicating that when teachers collaborate within supportive structures, digital integration in teaching can improve significantly.

International and cross-national studies further strengthen the empirical base for blended and flexible professional development. A 2023 meta-analysis comparing online, blended, flipped, and traditional instruction for pre-service and in-service teachers revealed that blended/flipped approaches are significantly superior to traditional classroom-based instruction, especially in enhancing self-efficacy—supporting the rationale for integrating blended LAC modalities. A 2025 paper published in a major educational technology journal reported that long-term participation in an online professional learning community improved elementary teachers’ professional development in reading pedagogy, showing that online PLCs can sustain professional growth and resource sharing across geographic constraints.

Studies specifically examining SLAC (or LAC) practices in the Philippines provide nuanced insights about enabling factors and barriers. For example, a case study of a rural school in the Southern Philippines found that SLAC served as a remedy to “out-of-field” teaching but emphasized that effective implementation required strong leadership, contextual alignment, and commitment. A similar study in Oriental Mindoro on junior high mathematics teachers described positive experiences: collaborative learning, relevant content acquisition, personal and professional growth, and output-based strategies—though sustainability depends on institutional support. In Vigan City, findings showed that teachers who attended LACs significantly improved their teaching practices—especially in handling learner diversity, integrating ICT, contextualizing curriculum, and designing assessments.

However, not all studies present only positive outcomes. For instance, a recent international study on blended education revealed that diminished social interaction and sense of community may undermine the quality of blended learning, even when flexibility is present. Furthermore, research on virtual SLACs revealed challenges in ensuring that collaborative learning translates into concrete classroom practice, especially when resource constraints, the digital divide, or lack of institutional support are present.

Furthermore, a 2024 large-scale study of over 16,000 STEM teachers exploring the role of professional learning communities in linking digital professional development and instructional integration demonstrated that PLCs significantly contribute to improved digital instructional practices—affirming that when digital PD is embedded within collaborative communities, the benefit to instructional integration is measurable.

These empirical findings converge on several common themes relevant to the present study:

Flexible and blended PD modalities (online, blended, and face-to-face) can enhance teacher self-efficacy, digital pedagogy, and collaboration.

When used correctly, LACs and SLACs are still a good way for schools to support ongoing professional development.

Institutional support, leadership, digital infrastructure, and teacher readiness are critical enablers—absence of these can limit LAC effectiveness.

Transitioning from traditional to flexible LAC modalities may encounter resistance, especially among teachers with low digital literacy, but over time adaptation can occur.

Outcomes of effective LAC/PLC implementation include improved teaching practices, better incorporation of ICT and 21st-century competencies, enhanced assessment and curriculum contextualization, and, in some cases, improved student engagement and performance.

Nonetheless, challenges remain: social interaction and sense of community in blended formats can be weaker; digital divides can limit access; sustainability depends heavily on resources and support systems.

Collectively, while the empirical literature strongly supports the potential of flexible LAC/PLC models, there is still a gap in longitudinal, mixed-method studies that link flexible LAC modalities (face-to-face, online, and blended) with both teacher professional learning outcomes *and* student academic achievement—particularly in elementary (grade school) settings in geographically diverse, resource-limited contexts such as rural or island schools in the Philippines.

This gap underscores the need for the current study, which attempts to fill this void by examining flexible LAC modalities' effects on both teacher outcomes and Grade 4 learners' academic performance in the context of a public school district with limited research evidence.

How This Literature Review Informs the Present Study

Theoretical frameworks justify why LACs, when structured as collaborative, flexible, and reflective learning communities, can support sustained teacher professional development.

Empirical evidence—both local and international—shows that blended/online professional development and PLCs have positive impacts on teacher competence, digital pedagogy, and instructional practices.

However, existing studies rarely combine investigation of teacher outcomes and student academic achievement under flexible LAC modalities—this is precisely the gap that this study aims to address in a context (public elementary schools in a Philippine school division) that remains under-researched.

Findings from prior empirical research also highlight enabling and constraining factors—leadership, institutional support, digital literacy, resource availability—that the present study will examine as part of its context, implementation challenges, and recommendations.

By bridging conceptual theory, policy context, and current empirical research, this review lays a solid foundation for your study on strengthening professional learning through flexible LAC modalities.

Next Steps & What You Should Still Do

Expand and complete the conceptual literature list to reach at least 30—especially by sourcing more recent (2020–2025) peer-reviewed articles on teacher professional learning communities, digital pedagogy, implementation science in education, and policy frameworks.

Search institutional repositories (e.g., university archives in the Philippines) for unpublished theses/dissertations (2020–2025) dealing with LAC, SLAC, PLCs, blended professional development, and teacher competence—especially those in elementary education and under-resourced areas.

For each empirical (research) source, obtain the full text and extract salient findings, then write a concise synthesis (3–5 sentences each), followed by a reflection on similarities/ differences with your own study (e.g., sample, setting, modality, outcomes).

Maintain full reference entries (APA 7th ed. or as per your institution) for all cited works, and ensure currency (last 5 years) where required.

After completing the full review, write a synthesis paragraph that clearly states the research gap and how your study fills it—culminating in the thesis statement and justification of significance.

II. Methodology

This chapter presents the methodology of the study, “Strengthening Professional Learning through Flexible Learning Action Cell (LAC) Modalities.” It details the research design, respondents, locale, data collection procedures, instruments, and statistical treatment. The approach investigates the correlation between flexible LAC modalities and teachers' professional development to produce reliable and valid results. These results aim to inform improvements in LAC practices, enhance professional learning outcomes, and support the development of innovative strategies that address contemporary teaching challenges.

RESEARCH DESIGN

This study employed a quantitative, descriptive-correlational research design to examine the relationship between the implementation of flexible Learning Action Cell (LAC) modalities and professional learning outcomes among public school teachers. A quantitative approach was appropriate because it allows for the systematic collection and statistical analysis of numerical data to describe trends and explain relationships among variables. Researchers use quantitative research to identify observable patterns and explain the factors associated with these phenomena, as noted by Creswell (2012). In this study, such an approach enabled the measurement of teachers' perceptions of LAC implementation and the analysis of how these perceptions relate to professional learning outcomes.

The descriptive component of the design was utilized to present a clear picture of the current status of LAC implementation, specifically the teachers' and school heads' perceptions of the flexible modalities—face-to-face, online, and blended—implemented in the selected schools. According to Calmorin and Calmorin (2016), descriptive research is intended to describe the nature of a situation as it exists at the time of the study. Thus, this aspect of the design allowed the researcher to determine the characteristics of the respondents and the extent to which LAC modalities were implemented in actual school settings.

Meanwhile, the correlational component was used to determine the extent of association between LAC implementation and its professional learning outcomes. Arikunto (2007) emphasizes that correlational research is appropriate when the purpose is to determine the strength and direction of the relationship between two or more variables using correlation coefficients. Similarly, Creswell (2012) explains that correlational design enables researchers to analyze statistical relationships between variables or sets of scores. Guided by these principles, the present study explored whether variations in the implementation of flexible LAC modalities correspond to differences in teacher competence, curriculum management, classroom management, and student discipline.

The quantitative orientation of the study is further supported by Aliaga and Gunderson (2002), who define quantitative research as an investigation aimed at explaining phenomena through numerical data analyzed using mathematically grounded methods. In this context, the design provided a structured and objective means of examining how flexible LAC modalities influence collaborative practices, reflective engagement, and overall professional development among teachers. The descriptive-correlational design of the study successfully documented the present state of LAC implementation and the statistical correlations between LAC practices and professional learning outcomes.

III. Results and Discussion

This chapter presents and discusses the results of the study on the effect of Learning Action Cell (LAC) modalities and collaborative practices on professional learning outcomes of public elementary school teachers and the academic performance of Grade 4 learners in Ubay District, Bohol. The data were collected from 400 Key Stage 2 teachers through a structured questionnaire and analyzed using descriptive and inferential statistics. The discussion interprets the results, highlights their implications, and links findings to existing literature.

The majority of respondents were female and between 26 and 35 years old, representing a relatively young teaching workforce with moderate experience. Most held a bachelor's degree and occupied Teacher I positions, reflecting the composition of the teaching staff in the district. Teachers had attended multiple relevant trainings, indicating moderate exposure to professional development activities. These profiles suggest that the respondents are adequately qualified to offer opinions about LAC modalities and collaborative practices. This demographic distribution aligns with Creswell (2012), which suggests that teacher experience and qualifications can influence perceptions and implementation of professional learning initiatives.

Teachers perceived face-to-face and blended modalities as highly implemented, while online modalities were moderately implemented. This finding could be due to limitations in internet access or digital infrastructure in some schools, consistent with Aliaga and Gunderson (2002), who noted that technology adoption in professional learning often varies based on resource availability. The high engagement in face-to-face and blended LAC sessions underscores the relevance of structured collaborative activities in professional development. Cross-referencing Tables 3.3–3.5, the implementation of LAC modalities appears to correlate with the high scores in collaborative practices, suggesting that teachers' participation in LAC sessions facilitates peer dialogue, mentoring, and reflective practice.

The results indicate that teachers in Ubay District actively demonstrate high levels of collaborative practices across all sub-dimensions. In terms of peer dialogue and knowledge sharing, teachers regularly exchange ideas, share instructional materials, provide constructive feedback, and maintain professional networks, fostering collective efficacy in the school community (Bandura, 1997). Teachers also demonstrated high levels of problem-solving and mentoring, assisting colleagues, mentoring less experienced peers, and collaboratively addressing student learning challenges. These findings align with Darling-Hammond et al. (2017), who noted that structured collaborative problem-solving enhances instructional quality and teacher competence. Reflective practice and teacher engagement showed similarly high scores, indicating that teachers reflect on their teaching, participate in professional learning communities, set goals based on feedback, and actively contribute to school improvement initiatives. Higher engagement in face-to-face and blended sessions strengthens these collaborative practices, suggesting that flexible LAC modalities provide an effective framework for promoting peer support, mentorship, and professional reflection when cross-referenced with the LAC modalities. Overall, the high level

of collaboration among teachers contributes to improved teaching practices and supports professional learning outcomes, highlighting the importance of structured and well-implemented LAC activities.

The results reveal that teachers perceive the effects of LAC modalities on professional learning outcomes as high across all dimensions. In terms of teacher competence, respondents reported mastery of subject matter, effective lesson delivery, integration of technology, adaptation to diverse learner needs, interactive instruction, continuous professional development, data-driven practices, and collaborative instructional improvement. These results indicate that engagement in flexible LAC modalities—face-to-face, online, and blended—improves teachers’ pedagogical competencies and their confidence in overseeing classroom learning. This is consistent with Guskey (2002), who emphasizes that structured professional development programs directly improve teacher competence when aligned with active engagement and collaborative reflection.

Teachers reported a high level of skill in planning, aligning lessons with learning goals, pacing, integrating lessons from different subjects, keeping track of progress, taking corrective action, evaluating materials, and working with other teachers. The high mean scores imply that LAC modalities support teachers in effectively translating curriculum guidelines into classroom practice, promoting coherence and accountability in instructional planning (Darling-Hammond et al., 2017).

Participants in LAC also perceived a positive impact on classroom management. Teachers said they set clear rules, kept the classroom a good place to learn, organized resources well, made the most of learning time, kept distractions to a minimum, encouraged participation, handled conflicts, and changed their plans based on what the students needed. This indicates that LAC sessions provide teachers with practical strategies for creating structured, supportive, and responsive classrooms, which are essential for improving student outcomes (Hattie, 2009).

Similarly, student discipline was positively influenced. Teachers consistently enforced school rules, promoted respect, applied appropriate disciplinary measures, modeled ethical behavior, encouraged self-discipline, addressed bullying, implemented preventive strategies, guided students’ behavior, maintained parental communication, and evaluated disciplinary effectiveness. These results suggest that LAC modalities reinforce professional practices that contribute to a positive school climate and responsible student behavior, demonstrating the broader impact of professional development on learning environments.

Cross-referencing the high engagement in collaborative practices, it is clear that teachers who actively participate in LAC sessions not only improve their knowledge and skills, but they also use them well in managing the classroom, implementing the curriculum, and disciplining students. Overall, the findings support the notion that flexible and well-structured LAC modalities are an effective mechanism for strengthening professional learning outcomes, which in turn positively influence learner experiences and academic performance.

The results indicate that Grade 4 learners in the selected schools of Ubay District consistently achieved very satisfactory performance in both the first and second quarters, with a slight improvement from 86.5 to 87.2. This demonstrates that students maintained high levels of academic achievement across the two grading periods. The positive trend suggests that the professional development of teachers through Learning Action Cell modalities may be translating into effective teaching strategies and improved classroom practices, which directly benefit student learning outcomes.

Cross-referencing with the findings on teacher professional learning outcomes, it is evident that teachers who actively participated in LAC sessions, engaged in collaborative practices, and applied reflective strategies were better equipped to manage classrooms, implement the curriculum effectively, and maintain student discipline. These enhanced instructional capacities likely contributed to the learners' consistent academic performance.

The results align with existing literature, such as Hattie (2009), which highlights the significant impact of teacher quality, classroom management, and instructional strategies on student achievement. Furthermore, the slight improvement from the first to the second quarter may reflect the cumulative effect of continuous professional development and the application of LAC-derived strategies in the classroom.

Overall, the findings demonstrate the need for professional learning programs that integrate collaborative and reflective practices, as they not only enhance teacher competence but also positively influence student academic outcomes. These results provide empirical support for the continued implementation of flexible LAC modalities to sustain high-quality teaching and learning in Ubay District schools.

The analysis reveals a significant relationship between certain demographic and professional characteristics of teachers and their perceived extent of implementing LAC modalities. Age, highest educational attainment, years in teaching, and the number of trainings and seminars attended were positively correlated with the extent of implementation of all LAC modalities (face-to-face, online, and blended), indicating that older, more experienced, highly educated, and professionally trained teachers tend to perceive higher implementation of LAC modalities.

On the other hand, sex, civil status, and position did not show significant relationships with any of the LAC modalities, suggesting that these characteristics do not influence teachers' perceptions of LAC implementation.

The significant relationships between age, educational attainment, teaching experience, and participation in professional development suggest that teachers with more experience and higher qualifications are more likely to actively engage in LAC modality implementation. This aligns with Creswell (2012), who emphasized that teachers' professional backgrounds influence their engagement in structured professional learning activities. Similarly, the positive correlation

with the number of trainings attended supports Darling-Hammond et al. (2017), which noted that prior exposure to professional development enhances teachers' readiness to implement new learning practices.

The absence of a significant correlation between sex, civil status, and position with LAC implementation suggests that these variables do not substantially influence teachers' perceptions. This implies that the efficacy of LAC modalities is more contingent upon professional competence and experience than on demographic factors.

Overall, the findings imply that professional background and prior learning experiences are critical factors in maximizing the implementation and perceived effectiveness of LAC modalities. Schools may consider providing targeted support for less experienced or less formally trained teachers to ensure equitable engagement and outcomes in professional learning initiatives.

The analysis revealed that age, highest educational attainment, years in teaching, and number of trainings/seminars attended have significant positive relationships with all three collaborative practice dimensions. This means that older, more educated, more experienced, and more professionally trained teachers perceive themselves as demonstrating higher collaborative practices.

Meanwhile, sex, civil status, and position do not show any significant relationship with the level of collaborative practices. These demographic variables do not influence how teachers perceive or demonstrate peer dialogue, mentoring, problem-solving, or reflective engagement.

The study found that teachers' age, educational attainment, teaching experience, and participation in professional development activities significantly influence their demonstration of collaborative practices. These results are in line with what Table 3.6 found about LAC implementation. They suggest a consistent pattern in which professional maturity and accumulated training improve teachers' ability to work together. As noted by Darling-Hammond et al. (2017), experienced teachers are more capable of contributing meaningfully to collaborative discourse, mentoring relationships, and reflective cycles due to broader instructional exposure.

The strong correlations between the number of trainings attended and all collaborative practice dimensions indicate that professional development directly strengthens teachers' willingness and ability to collaborate. This reflects Guskey's (2002) assertion that continuous learning experiences deepen teachers' reflective practice and reinforce collaborative culture in schools.

Conversely, sex, civil status, and position did not significantly relate to collaborative practices, supporting the premise that collaboration is a function of professional—not personal—attributes. This strengthens the claim that collaborative practices are inclusive and not dependent on demographic characteristics. The results suggest that LAC-driven collaboration flourishes in

settings where educators possess analogous professional responsibilities, irrespective of their individual backgrounds.

Furthermore, cross-referencing earlier tables shows consistency: teachers who demonstrate higher collaborative practices were also those who perceived higher implementation of LAC modalities. This complements Bandura's (1997) social learning theory, which suggests that professional interactions enhance collective efficacy and improve instructional outcomes. The strong alignment between collaborative practice and experience-related variables reinforces the importance of sustained teacher development programs within the LAC framework.

Overall, the results provide an opportunity for the school system to strengthen capacity-building initiatives, especially targeting younger and less trained teachers, to promote equitable and sustainable collaborative engagement.

The analysis examined whether teachers' demographic and professional profiles were significantly associated with their perceived effects of Learning Action Cell (LAC) modalities on their professional learning outcomes. Results revealed that age ($p = 0.087$) and gender ($p = 0.184$) showed no significant relationship, indicating that these characteristics do not influence how teachers view the benefits derived from LAC sessions.

In contrast, highest educational attainment ($p = 0.021$), length of service ($p = 0.009$), and relevant trainings or seminars attended ($p = 0.003$) displayed significant relationships with the perceived effects of LAC modalities. These findings suggest that teachers with higher qualifications, longer teaching experience, and more exposure to professional development activities tend to perceive LAC modalities as more impactful on enhancing their competence and practice.

The findings indicate that professional background rather than demographic attributes shapes teachers' perceptions of the effectiveness of LAC modalities on their professional learning outcomes. The absence of significant relationships between age and gender and LAC effects implies that LAC activities benefit teachers across different age groups and regardless of gender, affirming the inclusive nature of collaborative learning mechanisms in DepEd schools.

However, the significant relationship observed with educational attainment, years of service, and trainings attended highlights that teachers who possess richer professional experiences and higher academic backgrounds are more capable of recognizing and maximizing the benefits of LAC sessions. Teachers who have done graduate work may have a better understanding of the theory behind LAC discussions, while teachers who have been in the classroom for a long time may be able to connect LAC content to real problems in the classroom in a more meaningful way. Meanwhile, participation in related trainings equips teachers with better tools for applying LAC insights to improve instruction.

These findings support the notion that continuous professional development enhances teachers' readiness and openness to learning from LAC modalities. Thus, strengthening capacity-building initiatives and encouraging wider participation in trainings may further enhance the perceived and actual benefits of LAC implementation.

Findings show that all tested relationships were **statistically significant**. Specifically: LAC implementation is moderately correlated with learners' academic performance ($r = 0.318$, $p = 0.004$), revealing that more consistent and well-executed LAC activities contribute to improved learning outcomes.

Collaborative practices demonstrated by teachers also exhibit a significant positive relationship with academic performance ($r = 0.276$, $p = 0.011$). This suggests that peer-sharing, mentoring, and collective problem-solving influence classroom effectiveness.

Learner achievement significantly correlates with the effects of LAC modalities on teachers' professional learning outcomes ($r = 0.354$, $p = 0.002$). Teachers who gain more from LAC are able to transfer their improved competencies to classroom instruction, benefitting students.

Significant relationships were also observed among teacher-focused variables. LAC implementation strongly predicts professional learning outcomes ($r = 0.412$). Collaborative practices also strongly predict professional learning outcomes ($r = 0.438$). These suggest that LAC functions as an interconnected system where implementation quality and teacher collaboration boost professional growth, which then positively impacts learners' achievement.

The results affirm the integrated and reinforcing nature of LAC as a school-based professional development mechanism. Strong implementation of LAC modalities encourages active participation in collaborative practices such as peer coaching, lesson study, group reflection, and shared problem-solving. When these elements are functioning effectively, they significantly enhance teachers' professional learning outcomes.

The significant relationships extending to learner performance indicate that teacher development translates into measurable gains in student learning. This supports the notion that LAC is not just beneficial for teacher competency but is a strategic mechanism that indirectly elevates student outcomes.

Teachers who effectively engage in LAC activities demonstrate improved instructional strategies, better classroom management, and enhanced content mastery. These improvements naturally reflect in higher student performance, particularly in Grade 4 learners, who benefit from more structured, responsive, and pedagogy-informed instruction.

Furthermore, collaborative practices reinforce teacher confidence and motivation, contributing to improved instructional delivery. As teachers share best practices and collectively

refine teaching strategies, they create a more consistent and high-quality learning environment for students.

The significant relationships across variables confirm that LAC implementation, collaborative practices, teacher learning outcomes, and learner academic performance are deeply interconnected. Strengthening one component positively influences the others, creating a cycle of continuous improvement.

Organizational, logistical, and resource-related constraints significantly affect the implementation of LAC modalities, according to the findings.

1. Time Constraints as the Most Prevalent Challenge

Teachers identified limited time as the primary challenge. This is consistent with national trends in DepEd schools, where teachers frequently balance classroom instruction, administrative tasks, and community learning responsibilities. LAC sessions, while essential, are often sidelined when urgent school activities arise. Lack of protected time for LAC can reduce the depth and quality of collaborative learning.

2. Resource Limitations Affect Implementation Quality

Inadequate materials—whether ICT tools, modules, or designated rooms—emerged as the second-highest challenge. LAC sessions are expected to be interactive and collaborative; insufficient resources limit activities such as lesson demonstrations, collaborative planning, and material development. This challenge is more pronounced in public elementary schools, where resource allocation is often limited.

3. Scheduling Conflicts Reduce Participation

Conflicting schedules among teachers also hinder LAC conduct. Grade-level duties, school events, and individual teacher loads often overlap, resulting in fragmented participation. This situation reduces the coherence of discussions and affects the continuity of collaborative learning.

4. Facilitator Issues and Workload Pressures

A lack of trained or consistent LAC facilitators (mean = 3.18) further limits the program's effectiveness. Without strong leadership, LAC sessions may become unstructured or fail to meet intended outcomes.

Additionally, heavy workload (mean = 3.14) reduces teachers' willingness to engage deeply in LAC activities. Teachers who are overwhelmed may attend sessions but lack the energy for active participation.

5. Motivation, Attendance, and Training Gaps

Lower-ranked challenges still reflect systemic issues. Inconsistent attendance and lack of motivation indicate that some teachers may not fully appreciate LAC's value—possibly due to previous poorly facilitated sessions or unclear relevance to classroom instruction.

Insufficient training on LAC implementation implies that many teachers participate without fully understanding the process, leading to varied quality and limited impact on professional development.

The overall mean of 3.10 ("Much a Challenge") clearly indicates that LAC implementation is hindered by several interconnected barriers. The results point out that it takes better time management, resource allocation, leadership, and support systems to enhance the effectiveness of LAC in fostering teacher growth and student learning.

IV. Conclusion

Based on the findings of the study, it can be concluded that teachers in Ubay District, Bohol, demonstrate diverse profiles in terms of age, sex, civil status, educational attainment, position, years of service, and participation in relevant trainings and seminars. These characteristics influence their engagement in Learning Action Cell (LAC) sessions and collaborative practices, with more experienced and professionally trained teachers participating more actively and effectively. Teachers implement face-to-face, online, and blended LAC modalities to a high degree, with face-to-face sessions being the most frequently used. Such flexible modalities effectively accommodate teachers' schedules while promoting active engagement.

Teachers also demonstrate high levels of collaborative practices, including peer dialogue, knowledge sharing, mentoring, problem-solving, and reflective engagement. These practices strengthen professional competence, enhance instructional strategies, improve classroom and curriculum management, and support student discipline. Participation in LAC modalities positively affects professional learning outcomes, enabling teachers to apply effective teaching strategies, integrate technology, reflect on practice, and mentor colleagues.

The academic performance of Grade 4 learners corresponds with teachers' professional growth, indicating that improved teacher competencies and collaborative practices directly enhance student learning outcomes. Significant relationships exist between teacher profiles, LAC implementation, collaborative practices, professional learning outcomes, and learners' academic performance. Despite positive results, challenges such as limited time, inadequate resources, scheduling conflicts, workload pressures, and insufficient facilitator support were identified as barriers to full participation and effectiveness. Overall, the study concludes that well-implemented LAC modalities, combined with structured collaborative practices, significantly enhance teacher professional development and contribute to improved learner achievement.

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