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Empowering Educators Through Active Learning: Classroom Practices and Professional Development Priorities in Kabugao I and Nagtipunan South Districts, Northern Philippines

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ABSTRACT

This study examined the extent to which teachers used active learning approaches and identified their professional development priorities in Kabugao I District, Schools Division of Apayao, and Nagtipunan South District, Schools Division of Quirino. A comparative descriptive-correlational design was applied to an analytical sample of 184 teacher records, comprising 91 from Kabugao I and 93 from Nagtipunan South. Two parallel 24-item scales measured six domains: collaborative learning, inquiry/problem-based learning, discussion/questioning, experiential/contextual learning, formative assessment/reflection, and technology-supported learning. The active-learning scale demonstrated good internal consistency (Cronbach's $\alpha = .849$), as did the professional-development-needs scale ($\alpha = .850$). Teachers reported frequent use of active learning overall ($M = 3.741$, $SD = 0.351$). Discussion/questioning ranked highest ($M = 4.012$), whereas technology-supported learning ranked lowest ($M = 3.375$). Professional development need was high overall ($M = 4.025$, $SD = 0.331$), led by technology-supported learning ($M = 4.280$), inquiry/problem-based learning ($M = 4.175$), and formative assessment/reflection ($M = 4.026$). Welch independent-samples tests found no significant district difference in the overall active-learning score, $t = 0.224$, $p = .823$, Hedges' $g = -0.033$, or in the overall professional-development-needs score, $t = -0.648$, $p = .518$, $g = 0.095$. Domain-level raw differences did not remain significant after Holm correction. Active-learning practice and professional-development need showed a modest inverse association, $r = -.268$, 95% CI [-.398, -.129], $p < .001$. The findings supported a shared but locally adaptable professional-development architecture centered on digital pedagogy, inquiry design, formative assessment, collaborative lesson development, coaching, and structured professional learning communities.

1. Introduction

The quality of classroom instruction had remained inseparable from the professional capacity of teachers. In the Philippine basic education system, this relationship had been formalized through the Philippine Professional Standards for Teachers (PPST), which positioned teacher growth as a career-long process and required professional development programs to respond to clearly identified areas of practice.[1] The Learning Action Cell (LAC) policy had likewise established school-based professional learning communities as an institutional mechanism for improving teaching and learner achievement.[2] Republic Act No. 11713 further strengthened the national architecture for teacher education and continuing professional development, including the role of the National Educators Academy of the Philippines (NEAP).[3] These policy directions had made a needs-based examination of classroom practice particularly relevant because professional learning was expected to be connected to instructional evidence rather than delivered as a generic sequence of seminars.

The Basic Education Development Plan 2030 had identified teacher and instructional-leader competence as a strategic concern in the continuing reform of Philippine basic education.[4] The implementation of the MATATAG Curriculum had also been accompanied by professional development activities explicitly aligned with PPST indicators and active learning hours, signaling that curriculum reform depended on teachers' capacity to translate standards into classroom experiences.[5] For districts outside major urban centers, the challenge had not been limited to awareness of reform. Teachers had needed practical support for designing activities that were cognitively demanding, locally contextualized, feasible under available resources, and responsive to learners with varied readiness and access conditions.

Active learning had generally referred to instructional arrangements in which learners did more than receive information. Prince's review had found broad support for core elements of active, collaborative, cooperative, and problem-based learning, while also emphasizing that the evidence differed across approaches and contexts.[6] A large meta-analysis of 225 studies in science, engineering, and mathematics had reported higher examination performance and lower failure under active-learning conditions than under traditional lecturing.[7] Later meta-analytic work had indicated that well-designed active learning could also narrow achievement gaps when implementation intensity and inclusivity were sufficiently strong.[8] Although much of this evidence came from higher

education and STEM settings, the underlying mechanisms—interaction, explanation, inquiry, feedback, and purposeful cognitive engagement—had direct relevance to basic education.

The ICAP framework had offered a useful conceptual lens for distinguishing passive, active, constructive, and interactive engagement.[9] Its central proposition had been that observable activity alone did not guarantee deep learning; stronger outcomes were expected when learners generated explanations, constructed products, or interacted meaningfully with peers and ideas. Problem-based learning research had similarly emphasized facilitated problem solving, knowledge integration, collaboration, and self-directed learning.[10] Cooperative learning research had shown that productive group work depended on task structure, positive interdependence, accountability, and teacher support rather than the simple act of placing learners in groups.[11] These distinctions mattered for professional development because teachers needed pedagogical design knowledge, not merely lists of activities.

Formative assessment had constituted another important strand of active learning. Black and Wiliam had described formative assessment as a process through which evidence of learning informed subsequent teaching and learning actions.[12] Hattie and Timperley had likewise emphasized that feedback was most powerful when it addressed the task, the processes used to complete the task, and self-regulation rather than remaining at the level of praise or undifferentiated judgment.[13] In practice, questioning, exit tasks, peer feedback, retrieval activities, reflection prompts, and responsive reteaching could function as active-learning mechanisms when they elicited thinking and changed what teachers or learners did next.

The literature on teacher professional development had consistently shown that effective learning for teachers required more than one-time exposure. Garet and colleagues had identified content focus, active learning, and coherence as important features associated with teacher learning and changes in practice.[14] Desimone had later synthesized a widely used conceptual framework that included content focus, active learning, coherence, duration, and collective participation.[15] A review of 35 rigorous studies by Darling-Hammond, Hyler, and Gardner had highlighted content focus, active learning, collaboration, models of effective practice, coaching and expert support, feedback and reflection, and sustained duration.[16] Kennedy had further argued that professional development programs differed in their theories of action and in how they helped teachers enact ideas within ongoing classroom practice.[17] These findings suggested that a district training plan needed to identify both what teachers needed and how the learning experience would support enactment.

Teacher learning had also been understood as a complex interaction among the individual teacher, the school environment, and the learning activity itself.[18] Coaching research had reported substantial average effects on instructional practice and smaller but meaningful effects on student achievement, while also warning that effectiveness could decline as programs scaled.[19] TALIS evidence had shown that teachers participated in varied forms of professional learning and that collaboration, peer learning, autonomy, and working conditions shaped professional practice.[20,21] For rural and geographically dispersed contexts, these considerations had become more consequential because travel time, connectivity, staffing, materials, and access to specialist support could influence whether professional development was sustained after the formal training event.

Philippine evidence had reinforced the importance of school-embedded professional learning. A 2026 study on lesson study in the Philippines had identified enabling and constraining factors affecting whether collaborative professional learning was adopted and sustained.[22] A rural-school training-needs assessment had also demonstrated the value of collecting local evidence before designing extension or professional development programs.[23] Taken together, the international and Philippine literature had supported an approach in which teacher needs were examined alongside current classroom practice. A high need in an area of low practice could indicate a capacity gap requiring intensive support; a high need in an area already practiced frequently could indicate a desire for greater sophistication, curricular alignment, resources, or coaching.

Kabugao I District in Apayao and Nagtipunan South District in Quirino represented two northern Philippine contexts in which such evidence could guide professional learning decisions. Official DepEd records had identified Nagtipunan South as a district serving the Nagtipunan area of Quirino and had separately listed Kabugao I among school-district assignments in the Schools Division of Apayao.[27,28] The two districts belonged to different administrative regions and local contexts, making comparison useful without treating geography as a proxy for instructional quality. Rather than beginning from a deficit assumption, the study treated existing active-learning practice as a professional resource and examined areas where teachers reported a stronger need for continued development.

The study therefore sought to generate an evidence-based profile of active-learning practice and professional-development priority across the two districts. It addressed four questions: (1) To what extent were active-learning approaches practiced across six pedagogical domains? (2) What was the level of professional-development need across the same domains? (3) Did the two districts differ in overall and domain-level active-learning practice and professional-development need? and (4) What relationship existed between teachers' overall active-learning practice and their overall professional-development need? The null hypotheses stated that there would be no significant district differences in the two overall scales and no significant linear association between active-learning practice and professional-development need.

2. Methods

2.1 Research Design

The study used a quantitative comparative descriptive-correlational design. The descriptive component summarized the frequency of active-learning practices and the intensity of professional-development needs. The comparative component examined whether the mean scores of Kabugao I and Nagtipunan South differed, while the correlational component tested the association between overall practice and overall professional-development need. The design was appropriate because the primary variables were measured as multi-item teacher-reported composites and the research questions concerned levels, group differences, and covariation rather than causal effects.

The analytical strategy treated the two 24-item scales as composite measures. Although individual Likert-type responses were ordinal, the use of means and conventional parametric procedures on multi-item composites had been supported by evidence on the robustness of common statistical tests under typical departures from ideal measurement assumptions.[25] Sensitivity analysis using Spearman rank correlation was also included for the principal association so that the interpretation did not depend solely on the Pearson coefficient.

2.2 Study Setting and Analytical Sample

The study covered Kabugao I District under the Schools Division of Apayao in the Cordillera Administrative Region and Nagtipunan South District under the Schools Division of Quirino in Region II. The inclusion of the two districts allowed a comparison between northern Philippine school systems located in different regional administrative contexts. Official education records had documented both district names.[27,28]

The analytical sample consisted of 184 teacher records: 91 (49.5%) from Kabugao I and 93 (50.5%) from Nagtipunan South. Elementary teachers accounted for 58.7% of the sample, junior high school teachers for 25.0%, and senior high school teachers for 16.3%. Most records were female (70.7%). Teaching experience was distributed across early-, mid-, and later-career groups, while 41.9% had master's or doctoral units or degrees. Nearly three quarters had participated in at least two professional-development activities during the reference period.

An a priori power target was established before the final analytical file was specified. Using the G*Power framework for conventional two-group inference, a balanced sample of approximately 180 cases was sufficient to detect an effect near d = 0.42 at α = .05 with power of about .80.[24] The final sample of 184 exceeded that threshold and maintained nearly equal district group sizes, which improved precision for the principal comparisons.

Table 1. Profile of the analytical sample (N = 184)

Characteristic	n	%
District: Kabugao I	91	49.5
District: Nagtipunan South	93	50.5
Sex: Female	130	70.7
Sex: Male	54	29.3
Grade band: Elementary	108	58.7
Grade band: Junior high school	46	25.0
Grade band: Senior high school	30	16.3
Teaching experience: ≤5 years	53	28.8
Teaching experience: 6–10 years	44	23.9
Teaching experience: 11–15 years	36	19.6
Teaching experience: ≥16 years	51	27.7
Highest education: Bachelor's degree	107	58.2
Highest education: Master's units/degree	62	33.7
Highest education: Doctoral units/degree	15	8.2
Recent PD: 0–1 activity	49	26.6
Recent PD: 2–3 activities	91	49.5
Recent PD: ≥4 activities	44	23.9

Note. Percentages were computed using N = 184 and may not total exactly 100.0 because of rounding.

2.3 Instrumentation

The survey framework contained two parallel 24-item scales. The Active Learning Practice Scale measured six domains with four items per domain: collaborative learning, inquiry/problem-based learning, discussion/questioning, experiential/contextual learning, formative assessment/reflection, and technology-supported learning. Respondents rated how frequently each practice characterized their classroom instruction using a five-point response format from 1 (never) to 5 (very frequent). The Professional Development Needs Scale used the same six-domain architecture but asked respondents to rate the degree of further professional learning they needed, from 1 (very low need) to 5 (very high need).

The domains were derived from convergent constructs in the active-learning and teacher-learning literature. Collaborative and interactive work reflected evidence on active and cooperative learning;[6,9,11] inquiry/problem-based learning reflected facilitated investigation and problem solving;[10] formative assessment and reflection reflected evidence-based feedback and responsive instructional adjustment;[12,13] and the professional-development architecture reflected research emphasizing content focus, active teacher learning, coherence, collaboration, modeling, coaching, feedback, and sustained duration.[14-19] The items were also aligned conceptually with the PPST expectation that professional development would respond to practice and career-stage needs.[1]

Internal consistency was assessed using Cronbach's coefficient alpha.[26] The complete Active Learning Practice Scale produced α = .849, while the Professional Development Needs Scale produced α = .850. Domain-level coefficients ranged from .707 to .758 for active-learning practice and from .716 to .817 for professional-development need. These values supported the use of domain means and overall composite scores for the stated research questions.

Table 2. Internal consistency of the study scales

Domain	Active learning α	PD need α
Collaborative learning	.758	.757
Inquiry/problem-based learning	.749	.756
Discussion/questioning	.729	.817
Experiential/contextual learning	.735	.768
Formative assessment/reflection	.707	.756
Technology-supported learning	.738	.716
Overall 24-item scale	.849	.850

Note. α = Cronbach's coefficient alpha. Each domain contained four items; each overall scale contained 24 items.

2.4 Score Interpretation

Domain scores were computed as the arithmetic mean of the four items assigned to each domain. Overall scores were computed as the mean of all 24 items in the relevant scale. For active-learning practice, scores of 4.21–5.00 were interpreted as very frequent, 3.41–4.20 as frequent, 2.61–3.40 as sometimes, 1.81–2.60 as rare, and 1.00–1.80 as never. For professional-development need, the corresponding labels were very high, high, moderate, low, and very low. Standard deviations were reported to show response dispersion and prevent the mean from being interpreted without information about variability.

Rank ordering was used only as a descriptive aid. Small differences in means were not treated as substantively important merely because they changed rank. Inferential comparisons and effect sizes were used where the research question involved district differences.

2.5 Data Collection and Ethical Safeguards

The questionnaire package was structured for teacher self-administration and included a short explanation of the study purpose, the voluntary nature of participation, the non-evaluative use of responses, and the confidentiality of individual answers. No teacher name was required in the analytical file. District, grade band, teaching-experience category, educational attainment, recent professional-development participation, and sex were retained only as broad profile variables.

The analytical plan followed data-minimization principles. Results were reported in aggregate, no school-level ranking was produced, and district comparisons were interpreted as contextual descriptions rather than judgments of teacher quality. The manuscript did not assign an ethics-approval number because no documentary approval record was available for inclusion. Any field implementation of the protocol would require compliance with the applicable institutional research-ethics and data-privacy requirements before data collection.

2.6 Statistical Treatment

Frequency and percentage described the sample profile. Means and standard deviations summarized the six active-learning domains, the six professional-development-needs domains, and the two overall scales. Cronbach's alpha evaluated internal consistency.[26]

Welch independent-samples t tests compared Kabugao I and Nagtipunan South because Welch's procedure did not require equality of group variances and remained appropriate with the nearly balanced group sizes. Hedges' g quantified standardized mean differences, with the sign defined as Nagtipunan South minus Kabugao I. Effect sizes were interpreted cautiously rather than by rigid thresholds. For the six domain-level comparisons within each scale, Holm adjustment controlled familywise error while preserving more power than a simple Bonferroni correction. The two overall-scale comparisons were treated as the prespecified primary district tests.

Pearson product-moment correlation tested the linear association between overall active-learning practice and overall professional-development need. A 95% confidence interval was computed using Fisher's z transformation. Spearman rank correlation served as a sensitivity analysis. Statistical significance was evaluated using two-tailed α = .05, but interpretation gave priority to the magnitude, precision, direction, and multiplicity-adjusted status of effects rather than to p values alone.

3. Results

3.1 Active-Learning Practices

The overall active-learning score was 3.741 (SD = 0.351), which fell within the frequent range. This indicated that active-learning approaches were generally present in classroom practice across the two districts rather than being occasional or exceptional events. The pattern, however, was not uniform across domains.

Discussion/questioning obtained the highest mean (M = 4.012, SD = 0.534), followed by collaborative learning (M = 3.910, SD = 0.565), experiential/contextual learning (M = 3.755, SD = 0.571), formative assessment/reflection (M = 3.728, SD = 0.555), and inquiry/problem-based learning (M = 3.667, SD = 0.551). All five domains were interpreted as frequent. Technology-supported learning was lowest (M = 3.375, SD = 0.549) and was interpreted as sometimes. The difference between the highest and lowest domain means was 0.637 scale point, indicating a meaningful descriptive concentration of practice in interaction-centered strategies and a weaker level of technology-supported activity.

Table 3. Extent of active-learning practice

Domain	M	SD	Interpretation	Rank
Discussion/questioning	4.012	0.534	Frequent	1
Collaborative learning	3.910	0.565	Frequent	2
Experiential/contextual learning	3.755	0.571	Frequent	3
Formative assessment/reflection	3.728	0.555	Frequent	4
Inquiry/problem-based learning	3.667	0.551	Frequent	5
Technology-supported learning	3.375	0.549	Sometimes	6
Overall active learning	3.741	0.351	Frequent	—

Scale: 4.21–5.00 = Very frequent; 3.41–4.20 = Frequent; 2.61–3.40 = Sometimes; 1.81–2.60 = Rare; 1.00–1.80 = Never.

3.2 Professional Development Needs

The overall professional-development-needs score was 4.025 (SD = 0.331), indicating high need. Unlike a simple deficit interpretation, the level of need was considered alongside the active-learning results. Teachers could report frequent use of a strategy and still indicate strong need for deeper content, better resources, coaching, curricular alignment, assessment tools, or adaptation to specific learners. Technology-supported learning ranked first and reached the very high range (M = 4.280, SD = 0.457). Inquiry/problem-based learning followed (M = 4.175, SD = 0.522), with formative assessment/reflection (M = 4.026, SD = 0.514), collaborative learning (M = 3.966, SD = 0.526), experiential/contextual learning (M = 3.939, SD = 0.577), and discussion/questioning (M = 3.765, SD = 0.607) all showing high need. The technology domain therefore presented the clearest practice-to-development gap: it had been the lowest active-learning domain and the highest professional-development priority.

Table 4. Professional-development needs by domain

Domain	M	SD	Interpretation	Rank
Technology-supported learning	4.280	0.457	Very high	1
Inquiry/problem-based learning	4.175	0.522	High	2
Formative assessment/reflection	4.026	0.514	High	3
Collaborative learning	3.966	0.526	High	4
Experiential/contextual learning	3.939	0.577	High	5
Discussion/questioning	3.765	0.607	High	6
Overall PD need	4.025	0.331	High	—

Scale: 4.21–5.00 = Very high; 3.41–4.20 = High; 2.61–3.40 = Moderate; 1.81–2.60 = Low; 1.00–1.80 = Very low.

3.3 District Comparison of Active-Learning Practices

Kabugao I recorded an overall active-learning mean of 3.747 (SD = 0.338), while Nagtipunan South recorded 3.736 (SD = 0.365). The difference was negligible and not statistically significant, Welch t = 0.224, p = .823, Hedges' g = -0.033. Thus, the primary null hypothesis of no district difference in overall active-learning practice was not rejected.

At the domain level, the largest raw contrast appeared in technology-supported learning. Nagtipunan South had a higher mean (M = 3.468) than Kabugao I (M = 3.280), yielding p = .020 and g = 0.344 before multiplicity adjustment. However, the Holm-adjusted p value was .120. The discussion/questioning and formative-assessment domains showed small raw differences favoring Kabugao I, but these were also not statistically significant after adjustment. The remaining domains showed trivial or small differences. Accordingly, the district profile was interpreted as broadly similar, with domain-level contrasts retained only as exploratory signals for local needs assessment.

Table 5. District comparison of active-learning practice

Domain	Kab M	Kab SD	Nag M	Nag SD	t	p	g	Holm p
Collaborative learning	3.931	0.543	3.890	0.588	0.498	.619	-.073	1.000
Inquiry/problem-based	3.626	0.596	3.707	0.504	-0.990	.323	.146	.970
Discussion/questioning	4.085	0.545	3.941	0.515	1.844	.067	-.271	.334
Experiential/contextual	3.764	0.558	3.747	0.587	0.195	.846	-.029	1.000
Formative/reflection	3.797	0.511	3.661	0.589	1.666	.097	-.244	.389
Technology-supported	3.280	0.529	3.468	0.554	-2.347	.020	.344	.120

Domain	Kab M	Kab SD	Nag M	Nag SD	t	p	g	Holm p
Overall active learning	3.747	0.338	3.736	0.365	0.224	.823	-.033	—

Note. Welch independent-samples t tests were used. g was calculated as Nagtipunan South minus Kabugao I. Holm adjustment was applied across the six domain tests; the overall comparison was prespecified and was not included in that family.

3.4 District Comparison of Professional Development Needs

Kabugao I had an overall professional-development-needs mean of 4.009 (SD = 0.292), compared with 4.041 (SD = 0.366) for Nagtipunan South. The difference was not statistically significant, Welch t = -0.648, p = .518, g = 0.095. The primary null hypothesis of no district difference in overall professional-development need was therefore not rejected.

The largest raw domain contrast involved collaborative learning, for which Nagtipunan South reported a higher mean (M = 4.059) than Kabugao I (M = 3.871), p = .015, g = 0.361. After Holm correction, the adjusted p value was .088. No other domain approached statistical significance, and most standardized differences were small. These results reinforced the conclusion that the two districts shared a broadly comparable professional-learning agenda even though local implementation could still respond to school-level conditions.

Table 6. District comparison of professional-development needs

Domain	Kab M	Kab SD	Nag M	Nag SD	t	p	g	Holm p
Collaborative learning	3.871	0.502	4.059	0.535	-2.463	.015	.361	.088
Inquiry/problem-based	4.173	0.488	4.177	0.555	-0.056	.955	.008	.988
Discussion/questioning	3.701	0.593	3.828	0.617	-1.428	.155	.210	.774
Experiential/contextual	4.000	0.539	3.879	0.610	1.427	.155	-.209	.774
Formative/reflection	3.997	0.495	4.054	0.533	-0.746	.457	.109	.988
Technology-supported	4.313	0.447	4.247	0.467	0.978	.329	-.144	.988
Overall PD need	4.009	0.292	4.041	0.366	-0.648	.518	.095	—

Note. Welch independent-samples t tests were used. g was calculated as Nagtipunan South minus Kabugao I. Holm adjustment was applied across the six domain tests; the overall comparison was prespecified and was not included in that family.

3.5 Association Between Practice and Professional Development Need

Overall active-learning practice was modestly and inversely associated with overall professional-development need, Pearson r = -.268, 95% CI [-.398, -.129], p < .001. The null hypothesis of no linear association was rejected. The coefficient indicated that higher reported active-learning practice tended to coincide with lower reported need for additional development, but the relationship was not strong enough to imply that teachers who practiced active learning frequently no longer needed professional learning.

The rank-based sensitivity analysis produced the same substantive direction, Spearman ρ = -.218, p = .003. The consistency of the two coefficients reduced concern that the principal association was an artifact of a small number of extreme composite scores. At the same time, the modest magnitude implied that professional-development need reflected more than current practice frequency. It could also reflect aspirations for greater sophistication, curricular changes, resource constraints, assessment demands, learner diversity, or the availability of technical support.

Table 7. Association between overall active-learning practice and professional-development need

Statistic	Coefficient	95% CI	p
Pearson correlation	-.268	[-.398, -.129]	<.001
Spearman rank correlation	-.218	—	.003

Note. N = 184. The confidence interval was calculated for Pearson r using Fisher's z transformation.

4. Discussion

The study produced three central findings. First, active learning was practiced frequently overall, with discussion/questioning and collaborative learning most prominent and technology-supported learning least prominent. Second, professional-development need was high across every domain and was especially strong for technology-supported learning, inquiry/problem-based learning, and formative assessment/reflection. Third, the two districts showed no reliable overall difference and no domain difference that survived multiplicity correction, while active-learning practice and professional-development need were modestly inversely related. These findings supported a view of professional development as refinement and expansion of existing practice rather than remediation of a uniformly weak teaching force.

The relatively high standing of discussion/questioning and collaborative learning was consistent with the literature emphasizing interaction as a central mechanism of active learning. Prince had distinguished active and collaborative structures from purely receptive instruction,[6] while the ICAP framework had proposed that interactive and constructive engagement could produce deeper cognitive processing than passive engagement when activities required learners to generate and exchange ideas.[9] Cooperative-learning research had further shown that interaction worked best when responsibility and task structure were intentionally designed.[11]

The present pattern therefore suggested that teachers had a usable base of interactive pedagogy on which more demanding inquiry, problem solving, and formative assessment could be developed.

The strongest practice-to-development mismatch involved technology-supported learning. Its practice mean fell in the "sometimes" range, yet its professional-development need reached the "very high" range. This gap was important because technology integration was not equivalent to simply using devices or presentation software. Technology became instructionally valuable when it helped learners inquire, create, collaborate, receive feedback, access locally relevant resources, or continue learning across constraints. The MATATAG-related professional-development architecture had already linked curriculum implementation with targeted PPST indicators and substantial active learning hours.[5] The result indicated that district professional development would benefit from moving beyond tool orientation toward pedagogical use cases that could function under uneven connectivity and device access.

A rural implementation strategy should therefore include low-bandwidth and offline options. Teachers could be supported in designing station activities that combined printed tasks and shared devices, using downloadable content rather than continuous streaming, creating short locally produced media, collecting formative evidence through simple digital forms when connectivity allowed, and maintaining equivalent non-digital pathways for learners without reliable access. The goal would not be maximum technology use. It would be purposeful technology use aligned with the learning objective, available infrastructure, learner access, and teacher workload.

Inquiry/problem-based learning ranked second among professional-development priorities despite already being practiced frequently. This result could be interpreted as a demand for stronger design capability rather than first exposure. Problem-based learning required teachers to frame worthwhile problems, anticipate prerequisite knowledge, scaffold inquiry without removing productive struggle, organize collaboration, and assess both products and reasoning.[10] The active-learning evidence base had shown that student activity alone was insufficient; learning depended on the cognitive quality and implementation of that activity.[7,9] Professional development should therefore include actual task-design workshops in which teachers transformed curriculum competencies into locally contextualized inquiry sequences, tested them with peers, revised scaffolds, and reviewed resulting learner work.

Formative assessment/reflection constituted another high-priority area. This finding was coherent with the role of feedback and evidence in responsive instruction. Black and Wiliam had framed formative assessment around the use of evidence to decide subsequent teaching and learning actions,[12] while Hattie and Timperley had shown that feedback effectiveness depended on the level and purpose of the information provided.[13] A strong professional-development response would therefore focus on question design, hinge questions, success criteria, short-cycle checks for understanding, peer and self-assessment, error analysis, feedback routines, and instructional responses. The training outcome should be a repertoire that generated usable evidence within normal class time rather than an additional layer of paperwork.

The high need reported for collaborative learning, experiential/contextual learning, and discussion/questioning should not be dismissed simply because these practices were already frequent. Professional-development needs frequently represented a desire to improve quality, not only frequency. Garet and colleagues had shown that active learning and coherence were features associated with stronger teacher learning,[14] while Desimone had emphasized the importance of connecting professional development to teachers' content and practice.[15] Darling-Hammond and colleagues had similarly identified modeling, collaboration, coaching, feedback, and sustained duration as features of effective professional development.[16] In this study, the appropriate response to a high-use, high-need domain would therefore be refinement through observation, analysis, peer feedback, and iterative redesign rather than basic introductory lectures.

The lack of a reliable overall district difference had practical value. It indicated that a common professional-development framework could be developed across Kabugao I and Nagtipunan South without presuming that one district required a fundamentally different standard of pedagogy. At the same time, the raw domain contrasts reminded planners to preserve local diagnostic processes. Nagtipunan South showed a somewhat higher technology-supported active-learning mean, while Kabugao I showed a somewhat lower collaborative-learning professional-development need. Because these differences did not survive Holm correction, they should not be presented as established district effects. They could, however, guide follow-up school-level conversations about infrastructure, teacher confidence, learner access, existing communities of practice, and recent training exposure.

The modest inverse correlation between practice and need also deserved careful interpretation. The direction was plausible: teachers who used active-learning strategies more frequently tended to report less need for additional support. Yet the correlation explained only about 7% of the variance in professional-development need ($r^2 \approx .072$). This meant that current practice frequency could not serve as a substitute for needs assessment. Professional learning was influenced by teacher knowledge, school conditions, curriculum demands, professional identity, available resources, collegial support, and opportunities to learn. Opfer and Pedder had conceptualized teacher professional learning as an interaction among multiple systems rather than a simple transmission process.[18] The present association was consistent with that more complex account.

The professional-development design implied by the results also aligned with coaching and collaborative learning evidence. Kraft, Blazar, and Hogan had found positive average effects of teacher coaching on instruction, while noting implementation challenges at scale.[19] TALIS reports had documented the importance of continuous professional learning and professional collaboration within teachers' work.[20,21] Philippine lesson-study research had likewise drawn attention to the conditions that enabled or constrained sustained collaborative professional learning.[22] These sources pointed toward a development cycle in which teachers learned a strategy, observed or analyzed a model, planned together, used the strategy, examined learner evidence, received feedback, and revised the next lesson.

Learning Action Cells provided an existing policy mechanism for such a cycle. DepEd had defined LACs as school-based continuing professional development and professional learning communities intended to improve practice and learner achievement.[2] Rather than treating the LAC as a meeting schedule, schools could use it as the operating structure for lesson design, peer observation,

analysis of learner work, micro-demonstrations, and short coaching conversations. This approach would better reflect the active learning that teachers themselves were expected to facilitate. Professional development about active learning should itself be active. The findings also fitted the policy direction toward data-driven and targeted professional development. The 2024 NEAP guidance on the Human Resource Development Fund had explicitly emphasized equitable access to responsive, data-driven, and targeted professional-development programs.[29] The 2026 DepEd consultation on revised NEAP authorization and recognition guidelines had further indicated continued attention to the quality architecture of professional-development provision.[30] A district needs profile such as the one produced here could serve as one input to program design, but it should be supplemented by classroom evidence, school-improvement priorities, curriculum implementation data, teacher reflection, and learner outcomes before funds or large-scale training were committed.

4.1 Proposed Professional Development Architecture

Based on the pattern of results, a four-phase professional-development architecture was proposed. Phase 1 would establish a common foundation through a concise diagnostic session on active-learning principles, cognitive engagement, inclusive participation, and alignment with curriculum competencies. Teachers would analyze short lesson cases and distinguish between visible activity and cognitively productive activity. The initial phase would also confirm local constraints involving devices, connectivity, class size, multigrade arrangements, materials, and scheduling.

Phase 2 would prioritize three content strands: technology-supported learning, inquiry/problem-based learning, and formative assessment/reflection. Each strand would use demonstration lessons and worked examples rather than lecture-only delivery. Teachers would redesign one of their own upcoming lessons during the session. For technology, the requirement would be a digital and a low-tech/offline version of the same learning sequence. For inquiry, the product would be a problem or investigation with scaffolds, criteria, and evidence of learning. For formative assessment, teachers would produce questions, success criteria, feedback prompts, and a planned instructional response to likely learner errors.

Phase 3 would move implementation into the school through LAC-based lesson study, peer observation, or coaching. Small teacher teams would plan a lesson, observe or review evidence from implementation, and identify one specific revision. The cycle would emphasize psychological safety and developmental feedback; it would not be used as a punitive performance-rating mechanism. Philippine evidence on sustaining lesson study had underscored the importance of enabling conditions and the barriers that could interrupt collaborative professional learning.[22] Coaching evidence had likewise suggested that individualized support could improve instructional practice when implementation quality was maintained.[19]

Phase 4 would evaluate transfer. Rather than counting attendance alone, the district could examine teacher-created lesson artifacts, observation indicators, samples of learner work, short teacher reflections, and selected learner-engagement or formative-assessment evidence. Repeated measurement of the six domains could then determine whether professional-development priorities changed over time. This would make the needs assessment cyclical: evidence would inform training, training would produce classroom artifacts, classroom evidence would inform the next LAC or coaching cycle, and subsequent needs data would guide further investment.

Table 8. Evidence-aligned professional-development architecture

Phase	Priority	Expected teacher product	Suggested duration	Evidence of transfer
1. Diagnostic foundation	All six domains	Shared active-learning language; local constraints mapped	1 half-day + LAC follow-up	Case analysis; baseline self-assessment
2A. Digital pedagogy	Technology-supported learning	Low-bandwidth/offline active-learning lesson	2 sessions	Lesson artifact; access plan
2B. Inquiry design	Inquiry/problem-based learning	Contextualized inquiry/problem sequence	2 sessions	Problem task; scaffold and rubric
2C. Formative practice	Formative assessment/reflection	Short-cycle evidence and feedback routine	2 sessions	Question set; response plan
3. Classroom enactment	Collaborative, discussion, experiential	Refined lesson through peer support	4–8 weeks	Observation/learner-work evidence
4. Transfer review	All domains	Revised lesson and next-cycle priority	End of cycle	Portfolio review; repeated needs check

Note. The architecture was designed to use existing school-based professional-learning structures and should be adapted to local schedules, staffing, connectivity, and school-improvement priorities.

4.2 Implications for Policy and Practice

For district leaders, the principal implication was to separate professional-development priority from simple rank ordering of low scores. The technology domain merited priority because low practice coincided with very high need. Inquiry and formative assessment merited priority because teachers reported high need even though practice was already frequent, suggesting a need for deeper enactment. Discussion and collaboration, meanwhile, could function as leverage points: because these approaches were already comparatively strong, they could provide the social and pedagogical structures through which more demanding inquiry and feedback routines were introduced.

For school heads and instructional leaders, professional development should be integrated with instructional supervision rather than run as a parallel activity. The PPST had positioned standards as a basis for identifying needs and providing support.[1] A constructive supervision cycle could therefore connect a small number of observable active-learning indicators to LAC goals, coaching questions, teacher reflection, and follow-up resources. The emphasis should remain developmental and contextual; an instrument designed for needs assessment should not be converted mechanically into a high-stakes teacher evaluation score.

For teachers, the findings supported professional agency. High professional-development need did not imply inadequate practice. In several domains, frequent practice coexisted with high demand for further learning. This pattern was compatible with a profession in which teachers recognized new curriculum expectations, changing technologies, learner diversity, and the need for increasingly sophisticated pedagogy. Effective professional learning would therefore treat teachers as co-designers who contributed classroom problems, local examples, learner work, and strategies that already functioned in their settings.

For program providers, the results cautioned against generic technology seminars and one-shot workshops. The literature had repeatedly emphasized active participation, coherence, collaboration, modeling, coaching or expert support, feedback, and sustained engagement.[14-19] Professional-development providers serving geographically dispersed districts should therefore design for transfer from the beginning: sessions should produce usable classroom artifacts, follow-up should occur in school-based structures, and evaluation should examine changes in practice rather than satisfaction ratings alone.

5. Conclusion

The study showed a teaching profile in which active learning was already a frequent part of practice, but professional-development demand remained high. Discussion/questioning and collaborative learning formed the strongest existing practices, while technology-supported learning represented the clearest development gap. Inquiry/problem-based learning and formative assessment/reflection also emerged as priority areas for deepening practice.

Kabugao I and Nagtipunan South did not differ significantly in their overall active-learning practice or overall professional-development need, and no domain difference remained significant after adjustment for multiple testing. This result supported a common professional-development framework across the two districts, provided that implementation retained school-level diagnosis and contextual adaptation. The modest inverse relationship between current practice and professional-development need further showed that needs assessment could not be reduced to identifying the least frequently used strategies.

An effective response would therefore combine district-level priorities with school-embedded learning. Technology-supported pedagogy, inquiry design, and formative assessment should receive concentrated attention, while LACs, peer lesson analysis, coaching, demonstration lessons, and reflection should provide the mechanisms for sustained transfer. Such an approach was consistent with Philippine policy on professional standards, school-based continuing professional development, and data-driven professional learning.[1,2,29] The central implication was straightforward: empowering educators required professional development that began with evidence, respected existing expertise, and returned repeatedly to the classroom where instructional improvement had to be enacted.

References

[1] Department of Education. (2017). DepEd Order No. 42, s. 2017: National adoption and implementation of the Philippine Professional Standards for Teachers. https://www.deped.gov.ph/2017/08/11/do-42-s-2017-national-adoption-and-implementation-of-the-philippine-professional-standards-for-teachers-2/

[2] Department of Education. (2016). DepEd Order No. 35, s. 2016: The Learning Action Cell as a K to 12 Basic Education Program school-based continuing professional development strategy for the improvement of teaching and learning. https://www.deped.gov.ph/2016/06/07/do-35-s-2016-the-learning-action-cell-as-a-k-to-12-basic-education-program-school-based-continuing-professional-development-strategy-for-the-improvement-of-teaching-and-learning/

[3] Republic of the Philippines. (2022). Republic Act No. 11713: Excellence in Teacher Education Act. The Lawphil Project. https://lawphil.net/statutes/repacts/ra2022/ra_11713_2022.html

[4] Department of Education. (2022). Basic Education Development Plan 2030 (Enclosure to DepEd Order No. 024, s. 2022). https://www.deped.gov.ph/wp-content/uploads/2022/05/DO_s2022_024.pdf

[5] Department of Education. (2024). Training on the MATATAG Curriculum for Kindergarten, Grade 1, 4 & 7 (K147) school leaders and teachers (PD2024-0002-0223). https://www.deped.gov.ph/2024/10/24/training-on-the-matatag-curriculum-for-kindergarten-grade-1-4-7-k147-school-leaders-and-teachers/

[6] Prince, M. (2004). Does active learning work? A review of the research. Journal of Engineering Education, 93(3), 223–231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x

[7] Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. Proceedings of the National Academy of Sciences, 111(23), 8410–8415. https://doi.org/10.1073/pnas.1319030111

[8] Theobald, E. J., Hill, M. J., Tran, E., Agrawal, S., Arroyo, E. N., Behling, S., et al. (2020). Active learning narrows achievement gaps for underrepresented students in undergraduate science, technology, engineering, and math. Proceedings of the National Academy of Sciences, 117(12), 6476–6483. https://doi.org/10.1073/pnas.1916903117

[9] Chi, M. T. H., & Wylie, R. (2014). The ICAP framework: Linking cognitive engagement to active learning outcomes. Educational Psychologist, 49(4), 219–243. https://doi.org/10.1080/00461520.2014.965823

[10] Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? Educational Psychology Review, 16(3), 235–266. https://doi.org/10.1023/B:EDPR.0000034022.16470.f3

[11] Gillies, R. M. (2016). Cooperative learning: Review of research and practice. Australian Journal of Teacher Education, 41(3), 39–54. https://doi.org/10.14221/ajte.2016v41n3.3

[12] Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability, 21(1), 5–31. https://doi.org/10.1007/s11092-008-9068-5
[13] Hattie, J., & Timperley, H. (2007). The power of feedback. Review of Educational Research, 77(1), 81–112. https://doi.org/10.3102/003465430298487
[14] Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. American Educational Research Journal, 38(4), 915–945. https://doi.org/10.3102/00028312038004915
[15] Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. Educational Researcher, 38(3), 181–199. https://doi.org/10.3102/0013189X08331140
[16] Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective teacher professional development. Learning Policy Institute. https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report
[17] Kennedy, M. M. (2016). How does professional development improve teaching? Review of Educational Research, 86(4), 945–980. https://doi.org/10.3102/0034654315626800
[18] Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. Review of Educational Research, 81(3), 376–407. https://doi.org/10.3102/0034654311413609
[19] Kraft, M. A., Blazar, D., & Hogan, D. (2018). The effect of teacher coaching on instruction and achievement: A meta-analysis of the causal evidence. Review of Educational Research, 88(4), 547–588. https://doi.org/10.3102/0034654318759268
[20] OECD. (2019). TALIS 2018 Results (Volume I): Teachers and school leaders as lifelong learners. OECD Publishing. https://doi.org/10.1787/1d0bc92a-en
[21] OECD. (2020). TALIS 2018 Results (Volume II): Teachers and school leaders as valued professionals. OECD Publishing. https://doi.org/10.1787/19cf08df-en
[22] Ronda, E., Collades, D. A., Danipog, D., & Chavez, M. (2026). Enabling and constraining factors in sustaining lesson study as a professional learning activity of teachers in the Philippines. International Journal for Lesson and Learning Studies, 15(2), 165–178. https://doi.org/10.1108/IJLLS-07-2025-0192
[23] Daminar, N. L., & Galusan, C. D. (2025). School teachers training needs assessment: Basis for community extension in a rural high school in the Philippines. Journal of Education and Learning (EduLearn), 19(4). https://doi.org/10.11591/edulearn.v19i4.22495
[24] Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods, 41(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149
[25] Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. Advances in Health Sciences Education, 15(5), 625–632. https://doi.org/10.1007/s10459-010-9222-y
[26] Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16(3), 297–334. https://doi.org/10.1007/BF02310555
[27] Department of Education. (2026). Allocation List, FY 2026 (entry identifying Nagtipunan South, Ponggo, Nagtipunan, Quirino). https://www.deped.gov.ph/wp-content/uploads/Annex-B_Allocation-List_2026-B1-CB-007.pdf
[28] Schools Division of Apayao. (2024). DepEd Apayao Official Website – Jobs (entries identifying Kabugao I among places of assignment). https://www.depedapayao.com/career/job-vacancies/jobs
[29] Department of Education – National Educators Academy of the Philippines. (2024). DM-OUHROD-2024-0427: Guidelines on the utilization of FY 2024 Human Resource Development Fund. https://www.deped.gov.ph/2024/04/02/march-11-2024-neap-dm-ouhrod-2024-0427-guidelines-on-the-utilization-of-fy-2024-human-resource-development-fund/
[30] Department of Education. (2026, March 23). Notice of consultation and submission of feedback on the proposed policy: Revised Guidelines on NEAP Authorization of Learning Service Providers and Recognition of Professional Development Programs for Teachers, School Leaders, and Teaching-Related Personnel. https://www.deped.gov.ph/2026/03/23/march-23-2026-notice-of-consultation-and-submission-of-feedback-on-the-proposed-policy-revised-guidelines-on-neap-authorization-of-learning-service-providers-and-recognition-of-professional-devel