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The Activities in Improving the Readiness of the Teachers in the Implementation of the MATATAG Curriculum in Kindergarten and Grade 1 In Ocampo District, Division of Camarines Sur

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ABSTRACT

The MATATAG Curriculum began phased implementation in Kindergarten and Grades 1, 4, and 7, making teacher capability and school-level support central to implementation quality. Objective: This study described Kindergarten and Grade 1 teachers' readiness and the activities supporting MATATAG implementation across big, medium, and small schools in Ocampo District, Camarines Sur. The attached results chapter documented a descriptive survey using a five-point questionnaire. It contained 36 readiness indicators across four domains and 74 implementation-support indicators across eight domains. Weighted means and ranks summarized school-category ratings. Kendall's coefficient of concordance (W), with three school-size categories as raters, assessed whether item priorities were ordered similarly across categories. Recalculation from the detailed tables produced an overall readiness mean of 4.51; small schools had the highest readiness profile (4.60), followed by medium (4.48) and big schools (4.46). Communication was highest (4.57), while information/media/technology and learning/innovation were lowest (both 4.48). Implementation supports averaged 4.50; medium schools were highest (4.59), followed by big (4.52) and small schools (4.38). Professional development was highest (4.56), while instructional leadership/supervision was lowest (4.45). Concordance was significant for two of four readiness domains and five of eight implementation-support domains. Teachers reported high readiness, but school capacity was uneven. Small schools' comparatively strong readiness coexisted with weaker facilities, assessment support, learning resources, and external partnerships. Results support targeted professional learning, resource equity, developmentally aligned assessment, and triangulation with observations, artifacts, and learner evidence. Exact respondent-level methods and ethics details were absent from the supplied files and require author confirmation.

1. Introduction

The MATATAG Curriculum represents a major recalibration of Philippine basic education. Its phased introduction began with Kindergarten and Grades 1, 4, and 7 in school year 2024–2025, with policy attention directed toward foundational literacy, numeracy, learner well-being, and a less congested curriculum.[1,2] For early-grade teachers, implementation requires more than familiarity with revised competencies. It depends on the capacity to interpret curriculum standards, plan developmentally appropriate lessons, use suitable assessments, organize inclusive classrooms, and select resources that remain feasible in different school contexts.

Curriculum reform is enacted through interactions among teacher knowledge, school organization, instructional materials, leadership, and professional learning. Research on implementation cautions that scale is not only the number of schools reached; it also involves depth of practice, sustainability, spread, and ownership.[3] A teacher may be personally willing and confident while lacking dependable connectivity, learning resources, coaching, or institutional partnerships. Conversely, schools may possess equipment without the pedagogical capacity needed to convert it into meaningful learning. Readiness and implementation support are therefore related but distinct constructs.

Professional development is a central implementation mechanism. Effective teacher learning is generally strengthened by content focus, active learning, coherence with policy and practice, sufficient duration, and collective participation.[4] It is also shaped by the reciprocal interaction of the teacher, the school, and the learning activity rather than by training attendance alone.[5] In the Philippine system, the Learning Action Cell is formally positioned as a school-based professional learning community for improving practice and learner achievement, while the Philippine Professional Standards for Teachers provide expectations across career stages and guide learning and development.[6,7] These structures make collaborative professional learning, instructional supervision, and monitoring especially relevant to MATATAG implementation.

Technology and infrastructure add another layer of complexity. Digital tools can expand access to materials and communication, but international evidence shows that benefits depend on pedagogy, equitable access, teacher preparation, governance, and fit with context.[8] A high rating for using online platforms does not establish that devices, connectivity, technical support, and accessible

content are consistently available. This distinction is particularly important in smaller schools, where individual adaptability may coexist with constrained institutional capacity.

Assessment alignment is equally consequential in Kindergarten and Grade 1. DepEd's current national literacy-assessment portal assigns the Comprehensive Rapid Literacy Assessment to Grades 1–3 and the Philippine Informal Reading Inventory to Grades 4–6 and Grades 7–10.[9] The source questionnaire nevertheless includes Phil-IRI among early-grade assessment activities. This item can still be reported as part of the source instrument, but it should not be interpreted as policy endorsement for Kindergarten or Grade 1 without checking the applicable DepEd guidance and local assessment protocols.

The attached study examined readiness through four domains: information, media, and technology skills; learning and innovation skills; communication skills; and life and career skills. It examined implementation support through eight areas: professional development; instructional leadership and supervision; monitoring and evaluation; research-based instructional practice; learning resources; assessment practices; physical and technological facilities and infrastructure; and external partnership and leadership. Ratings were reported separately for big, medium, and small schools in Ocampo District.

This journal version addressed three questions: (1) What was the reported level of teacher readiness across the four domains and school-size categories? (2) What was the reported extent of implementation-support activities across the eight domains and categories? (3) To what extent did big, medium, and small schools agree in the rank ordering of indicators within each domain? A fourth analytic purpose was added for publication integrity: to reconcile duplicate or internally inconsistent tables without changing the underlying source evidence.

2. Methods

2.1 Design and Setting

Based on the structure of the supplied results chapter, the study operated as a cross-sectional descriptive-evaluative survey. It examined Kindergarten and Grade 1 teachers involved in MATATAG Curriculum implementation in Ocampo District, Division of Camarines Sur, Philippines. Results were aggregated for schools categorized by the source as big, medium, and small. The source did not state the operational definition or number of schools in each category.

2.2 Participants and Sampling

The target participants were Kindergarten and Grade 1 teachers. The attached Chapter 4 files did not report the number of respondents, grade-level distribution, school count, inclusion criteria, response rate, sampling technique, or participant demographics. These details are indispensable for peer review and must be inserted from the complete thesis before submission. No respondent count can be inferred from the number of questionnaire indicators or from the three school-size aggregates.

2.3 Instrument

The questionnaire contained 110 indicators. Part I measured four readiness domains using 36 indicators: information, media, and technology skills (9); learning and innovation skills (10); communication skills (8); and life and career skills (9). Part II measured eight implementation-support domains using 74 indicators: professional development (9); instructional leadership and supervision (10); monitoring and evaluation (8); research-based instructional practice (9); learning resources (10); assessment practices (10); physical and technological facilities and infrastructure (9); and external partnership and leadership (9).

Each indicator was rated on a five-point scale. The source tables use the verbal labels Very Much Evident, Much Evident, and Evident for readiness, and Very Much Effective, Much Effective, and Effective for implementation support. Exact response anchors and interval cutoffs were not supplied; this manuscript reproduces the source labels without creating new thresholds. Several items appear to cross conceptual boundaries—for example, ethical behavior under communication and technology literacy under life and career skills—which supports revalidation before reuse.

2.4 Data Collection and Ethics

The supplied files do not describe questionnaire administration, informed consent, confidentiality, institutional authorization, ethics review, or data security. Because the tables report only aggregates, no personally identifying information was incorporated into this article. Before submission, the author should document the applicable school-division permission, university ethics determination or exemption, consent process, voluntary participation, data handling, and conflict-of-interest statement.

2.5 Statistical Analysis

Weighted means and ranks summarized each indicator and domain for big, medium, and small schools. Overall domain means were taken from the detailed domain tables; when a later summary table conflicted with the detailed values, the detailed values were retained and the discrepancy was disclosed. Grand means across readiness domains and implementation-support domains were recalculated from the detailed domain values and rounded to two decimals.

Kendall's coefficient of concordance (W) evaluated agreement in item ordering among the three school-size categories. For each domain, the indicators were the objects ranked, so n equaled the number of indicators in that domain and k equaled three school-size categories. The reported chi-square approximation was checked using $\chi^2 = k(n - 1)W$, with $df = n - 1$. Exact upper-tail probabilities were recalculated from the reported χ^2 and df at $\alpha = .05$. A significant result indicates that school categories ranked indicators similarly; it does not demonstrate equal average ratings, between-category difference, or teacher-level association.[10]

No confidence intervals, standard deviations, respondent-level tests, reliability coefficients, or missing-data diagnostics were available. Consequently, the analysis is descriptive at the school-category aggregate level. Means should not be overinterpreted as precise population estimates, and W should not be generalized to individual teachers.

3. Results

3.1 Teacher Readiness

The detailed readiness tables produced a grand mean of 4.51. Communication skills ranked highest (4.57), followed by life and career skills (4.51). Information, media, and technology skills and learning and innovation skills both averaged 4.48. Small schools had the highest cross-domain mean (4.60), followed by medium schools (4.48) and big schools (4.46). These values describe the source ratings and do not establish statistically significant mean differences among school-size categories.

Table 2. Readiness by Domain and School-Size Category

Readiness domain	Big	Medium	Small	Overall	Source VI
Information, media, and technology	4.44	4.46	4.54	4.48	Much Evident
Learning and innovation	4.48	4.45	4.54	4.48	Much Evident
Communication	4.43	4.57	4.70	4.57	Very Much Evident
Life and career	4.50	4.42	4.61	4.51	Very Much Evident
Recalculated grand mean	4.46	4.48	4.60	4.51	Very Much Evident

Note. VI = verbal interpretation. Grand means were calculated from detailed domain means. The later source summary reports a conflicting overall grand mean of 4.58 and is not used as the primary estimate.

Table 3. Highest- and Lowest-Rated Readiness Indicators

Domain	Highest-rated indicator	M	Lowest-rated indicator	M
Information/media/technology	Use online learning-management systems and educational applications for planning and assessment	4.60	Continuous professional development for technology integration in early childhood education	4.28
Learning and innovation	Use collaborative learning to promote teamwork and communication	4.84	Use critical-thinking activities for problem-solving	3.92
Communication	Model ethical behavior and integrity	4.88	Use digital platforms and online resources for lesson delivery	4.30
Life and career	Integrate digital tools as technology literacy	4.81	Demonstrate intercultural understanding	4.29

Note. Indicator wording is lightly condensed for journal readability while preserving the substantive content and reported means.

3.2 Implementation-Support Activities

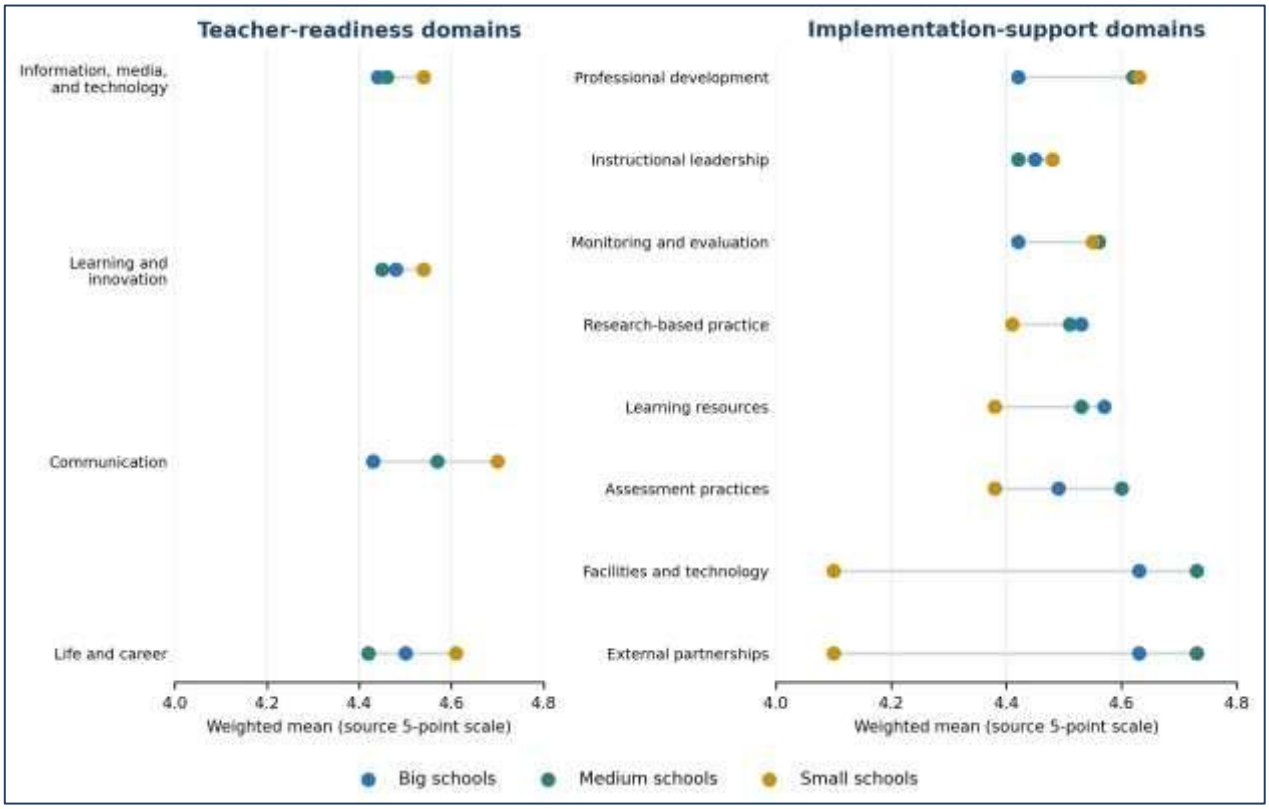
Implementation-support activities had a recalculated grand mean of 4.50. Professional development ranked highest (4.56). External partnership and leadership followed (4.51), while monitoring and evaluation averaged 4.51 and physical and technological facilities averaged 4.50. Instructional leadership and supervision was lowest (4.45), though it remained positively interpreted in the source. Medium schools had the highest support profile (4.59), big schools followed (4.52), and small schools were lowest (4.38).

Table 4. Implementation Supports by Domain and School-Size Category

Implementation-support domain	Big	Medium	Small	Overall
Professional development	4.42	4.62	4.63	4.56
Instructional leadership and supervision	4.45	4.42	4.48	4.45
Monitoring and evaluation	4.42	4.56	4.55	4.51
Research-based instructional practice	4.53	4.51	4.41	4.48
Learning resources	4.57	4.53	4.38	4.49
Assessment practices	4.49	4.60	4.38	4.49
Physical/technological facilities and infrastructure	4.63	4.73	4.10	4.50
External partnership and leadership	4.63	4.73	4.10	4.51
Recalculated grand mean	4.52	4.59	4.38	4.50

Note. Detailed-table values are primary. The source summary includes minor rounding/transcription differences for big schools and physical facilities.

Figure 1. School-Size Profiles Across Readiness and Implementation-Support Domains



Note. The horizontal axis begins at 4.0 to show profile differences; it does not imply that values below 4.0 were observed. Exact values appear in Tables 2 and 4.

Table 5. Highest- and Lowest-Rated Implementation-Support Indicators

Domain	Highest-rated indicator	M	Lowest-rated indicator	M
Professional development	Comprehensive MATATAG Curriculum training	4.89	Capacity building for instructional supervision	4.25
Instructional leadership	Learning Action Cell collaboration	4.85	Inclusive classroom practice for learners with special needs	3.54
Monitoring/evaluation	Use of the Philippine Early Childhood Development Checklist	4.78	Learner self-assessment and reflection	4.07
Research-based practice	Learner-centered approach	4.78	Instructional supervisory plans	4.02
Learning resources	Lesson exemplars and activity sheets	4.83	Implementation of the National Mathematics Program	4.32
Assessment practices	Use of Phil-IRI	4.65	Diagnostic tools including the Phil ECD Checklist	4.20
Facilities/technology	Multimedia projectors and audio-visual equipment	4.70	Professional development on new technologies	4.30
External partnerships	Community service projects	4.70	Parent–teacher associations	4.20

3.3 Rank Concordance Across School-Size Categories

Table 6. Kendall Concordance of Indicator Rankings Across Big, Medium, and Small Schools

Family	Domain	n	W	χ^2	df	p	Decision
Readiness	Information/media/technology	9	0.40	9.70	8	0.287	Not significant
Readiness	Learning and innovation	10	0.79	21.40	9	0.011	Significant

Family	Domain	n	W	χ^2	df	p	Decision
Readiness	Communication	8	0.69	14.58	7	0.042	Significant
Readiness	Life and career	9	0.52	12.52	8	0.129	Not significant
Implementation	Professional development	9	0.72	17.18	8	0.028	Significant
Implementation	Instructional leadership	10	0.89	23.88	9	0.004	Significant
Implementation	Monitoring and evaluation	8	0.70	14.64	7	0.041	Significant
Implementation	Research-based practice	9	0.70	16.83	8	0.032	Significant
Implementation	Learning resources	10	0.57	15.49	9	0.078	Not significant
Implementation	Assessment practices	10	0.42	11.40	9	0.249	Not significant
Implementation	Facilities and infrastructure	9	0.49	11.64	8	0.168	Not significant
Implementation	External partnerships	9	0.67	16.08	8	0.041	Significant

Note. k = 3 school-size categories. n = number of indicators ranked within the domain. Exact p-values are upper-tail probabilities from the χ^2 distribution and may differ from inequality statements in the source narrative.

School-size categories showed significant concordance for learning and innovation and communication readiness, but not for information/media/technology or life and career readiness. For implementation support, concordance was significant for professional development, instructional leadership, monitoring and evaluation, research-based practice, and external partnerships. It was not significant for learning resources, assessment practices, or facilities and infrastructure. Thus, some domains had a shared priority ordering across school categories, while resource-intensive domains showed less stable ordering.

4. Discussion

4.1 Readiness Was High but Not Uniformly Supported

The central pattern was a separation between reported teacher readiness and school-level implementation support. Small schools produced the strongest readiness profile, including the highest means in all four readiness domains, but the weakest implementation-support profile. Their lowest support means were physical and technological facilities and external partnership/leadership, both 4.10. This contrast suggests that individual capability and commitment did not automatically translate into equivalent organizational conditions. The result is consistent with implementation scholarship that treats change as an interaction among teachers, schools, and professional-learning opportunities.[5] It also aligns with the distinction between spreading a reform and achieving depth, sustainability, and local ownership.[3] A curriculum may be formally present in every school while its day-to-day enactment varies because of resource availability, leadership routines, assessment systems, or external support. For district planning, the key question is therefore not only whether teachers are ready, but whether the school environment enables them to sustain the intended practice.

Communication was the strongest readiness domain, while information/media/technology and learning/innovation were lower. Item-level findings, however, reveal construct overlap: ethical behavior was the strongest communication item, and technology literacy was the strongest life-and-career item. These placements make the domain scores difficult to interpret as pure constructs. A future instrument should map each item to a clear operational definition, seek expert review, pilot-test wording with early-grade teachers, and report internal-consistency or factor evidence before domain scores are used for decisions.

The weakest readiness indicators were continuous professional development for technology integration, critical-thinking activities, use of digital platforms for lesson delivery, and intercultural understanding. These are actionable because they point to practice rather than disposition. Professional learning should combine curriculum content with active rehearsal, lesson design, peer feedback, coaching, and follow-through—features associated with stronger professional-development effects.[4] The source's high rating for collaborative learning and the strong Learning Action Cell item provide a useful base for this work.[6]

4.2 Professional Learning and Instructional Leadership

Comprehensive MATATAG training was the highest implementation-support indicator, and professional development was the highest support domain. This finding suggests broad exposure to reform-oriented training. Yet the lowest professional-development item concerned capacity building for instructional supervision, while instructional leadership was the lowest domain overall. The pattern distinguishes initial orientation from the sustained leadership needed to translate policy into classroom routines.

The strongest instructional-leadership item was Learning Action Cell collaboration, consistent with DepEd's positioning of LAC as a school-based continuing professional-development strategy.[6] District leaders can preserve this strength by organizing cycles around concrete implementation problems: unpacking competencies, adapting exemplar lessons, analyzing learner work, rehearsing assessment tasks, and observing one another's instruction. LAC documentation should capture changes in plans and practice rather than attendance alone.

Inclusive classroom practice for learners with special needs was the lowest instructional-leadership indicator. Because MATATAG implementation includes learners with diverse language, disability, developmental, and socioeconomic profiles, inclusion should not be a peripheral seminar topic. Coaching and supervision tools should explicitly examine participation, accessibility, differentiation, universal-design features, and referral or support pathways. PPST can provide an organizing standard for identifying development needs and monitoring growth.[7]

Instructional supervisory plans were also weak within research-based practice. A practical response is a short improvement cycle: identify one priority from classroom or learner evidence, plan a focused intervention, observe enactment, review evidence, and revise. This connects research use with instructional leadership and makes monitoring formative rather than merely compliant.

4.3 Resources, Technology, and Equity

The most pronounced school-size divergence occurred in facilities, technology, and external partnership. Big and medium schools reported 4.63 and 4.73 in both domains, whereas small schools reported 4.10. Learning resources and assessment support were also lower in small schools (both 4.38). Although all means remained favorable, the relative pattern points to an equity issue: schools with strong teacher readiness may have fewer institutional supports for sustained implementation.

Technology should be judged by educational function, access, and teacher support, not by equipment counts alone. UNESCO's global synthesis emphasizes that digital technology can help in some contexts but that evidence, equity, governance, and teacher preparation determine whether it improves learning.[8] District monitoring should therefore distinguish availability from usability: functioning devices, connectivity, locally appropriate content, accessibility, maintenance, technical assistance, and integration with lesson objectives.

Small-school support can be organized through shared-resource hubs, scheduled device or material circulation, offline-first learning packages, pooled technical assistance, and cluster-based demonstration teaching. Equity does not necessarily require identical inputs; it requires sufficient and dependable capacity to deliver the same curriculum entitlement. Resource allocation should use gap evidence rather than school size alone.

The highest learning-resource indicator was access to lesson exemplars and activity sheets, while National Mathematics Program implementation was lowest. This may reflect the relative visibility of centrally or division-provided materials. Future monitoring should assess whether exemplars are adapted to learner needs, whether teachers understand the mathematical progression, and whether materials are actually used, rather than treating possession as implementation.

4.4 Assessment Alignment and Evidence Use

Assessment practices averaged 4.49, but the highest item—use of Phil-IRI—requires careful interpretation for this study population. DepEd's national assessment portal currently lists CRLA for Grades 1–3 and Phil-IRI for Grades 4–6 and Grades 7–10.[9] Kindergarten assessment should also remain developmentally appropriate and aligned with applicable early-childhood guidance. The questionnaire item should therefore be reviewed by grade level. For Grade 1, CRLA and relevant early numeracy tools may be more directly aligned; for Kindergarten, observation, work samples, developmental checklists, and curriculum-aligned performance evidence are generally more appropriate than importing an upper-grade reading inventory.

The lowest monitoring item concerned learner self-assessment and reflection. In early grades, self-assessment need not take the form of abstract rating scales. Teachers can use child-friendly success criteria, visual prompts, simple choice statements, oral reflection, portfolio selection, and brief conferences. Such practices can help learners articulate what they attempted and what support they need while remaining developmentally suitable.

High self-reported implementation ratings should be triangulated. A balanced monitoring system would combine teacher questionnaires with lesson plans, LAC outputs, classroom observation, samples of assessment tasks, inventories of usable resources, learner work, and grade-appropriate literacy and numeracy evidence. Desimone's methodological argument is relevant: no single mode should be privileged automatically; measures should align with the conceptual pathway from professional learning to teacher knowledge, practice, and learner outcomes.[4]

4.5 Meaning of Kendall Concordance

The concordance results show where school categories shared an item-priority pattern. Strong concordance in instructional leadership (W = .89) means that big, medium, and small schools ordered leadership indicators similarly, even though their mean levels were not identical. Significant W values in professional development, monitoring, research-based practice, and external partnerships likewise identify domains with common relative priorities. Non-significant concordance for learning resources, assessment, facilities, technology readiness, and life/career skills means the ordering of strengths and weaknesses varied more across school categories.

These statistics should not be described as evidence of significant differences among school sizes. Kendall W addresses agreement; a separate respondent-level design would be required to compare distributions or means among groups. The lack of respondent N, variability estimates, and raw data prevents such testing in the present article. The most defensible use of W here is programmatic: shared rankings can support districtwide action, whereas discordant rankings call for category-specific diagnosis.

6. Recommendations

Table 7. District Action Agenda Derived from the Findings

Priority	Recommended action	Verification indicator
Instrument integrity	Re-map all 110 items to operationally defined constructs; review grade-level assessment alignment; pilot-test; report content validity and reliability.	Validated instrument matrix, pilot results, and reliability evidence.
Methods completion	Insert respondent N, school count, sampling, dates, administration, response rate, ethics, and consent from the complete thesis.	Complete methods checklist and supporting approval records.

Priority	Recommended action	Verification indicator
Critical thinking	Use LAC cycles to design, rehearse, and review developmentally appropriate inquiry and problem-solving tasks.	Lesson artifacts, observation evidence, and learner work reviewed each quarter.
Inclusive practice	Embed accessibility, differentiation, and learner-support pathways in supervision and coaching.	Supervision tool includes inclusion indicators and follow-up actions.
Small-school equity	Prioritize shared resources, offline-access options, technical support, and cluster-based partnerships for small schools.	Usable-resource audit and closure rate for identified gaps.
Assessment alignment	Use grade-appropriate literacy, numeracy, developmental, and classroom-assessment tools; review the Phil-IRI item.	Assessment map by grade level and purpose.
Evidence triangulation	Combine self-report with observation, plans, LAC outputs, resource audits, assessment artifacts, and learner evidence.	District dashboard reports implementation and learner evidence together.
Partnerships	Strengthen parent–teacher associations and partnerships around specific resource or learner-support needs.	Signed action plans, contributions, participation, and outcome records.

For future research, the district should collect respondent-level data using a documented sampling frame, validated scales, and direct measures of implementation. Analyses should account for teachers nested within schools and distinguish Kindergarten from Grade 1. A longitudinal design could examine whether readiness and support predict implementation fidelity and learner progress after controlling for baseline differences.

References

[1] Department of Education. (2024, July 23). Policy Guidelines on the Implementation of the MATATAG Curriculum (DepEd Order No. 010, s. 2024). Department of Education, Republic of the Philippines. https://www.deped.gov.ph/2024/page/2/?cat=8

[2] Department of Education. (2024). MATATAG Curriculum: Curriculum guides for Kindergarten and Grades 1, 4, and 7. https://www.deped.gov.ph/matatagcurriculumk147/

[3] Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. Educational Researcher, 32(6), 3–12. https://doi.org/10.3102/0013189X032006003

[4] 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

[5] Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. Review of Educational Research, 81(3), 376–407. https://doi.org/10.3102/0034654311413609

[6] Department of Education. (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 (DepEd Order No. 35, s. 2016). 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/

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

[8] UNESCO. (2023). Global Education Monitoring Report 2023: Technology in education—A tool on whose terms? UNESCO. https://gem-report-2023.unesco.org/

[9] Department of Education, Bureau of Learning Delivery. (n.d.). Numeracy and Literacy Assessments Submission Portal. Retrieved August 21, 2026, from https://bld.deped.gov.ph/submission

[10] Legendre, P. (2005). Species associations: The Kendall coefficient of concordance revisited. Journal of Agricultural, Biological, and Environmental Statistics, 10(2), 226–245. https://doi.org/10.1198/108571105X46642