

# Integrating Content Across Disciplines: Practices, Perceptions, and Capacity-Building Needs of Public Elementary School Teachers

Mary Ann Baluca Capati

Department of Education, Schools Division of Pampanga, Sto. Niño Elementary School  
[maryannbaluca1996@gmail.com](mailto:maryannbaluca1996@gmail.com)

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Corresponding Email:  
[maryannbaluca1996@gmail.com](mailto:maryannbaluca1996@gmail.com)

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## Index Terms:

curriculum integration, interdisciplinary teaching, cross-disciplinary content knowledge, capacity building, elementary education, descriptive-comparative research

**Abstract.** This descriptive-comparative study examined how public elementary school teachers in the Magalang South District, Division of Pampanga, integrated learning content within and across disciplines during School Year 2023-2024, and how their practices compared with the perceptions of their school heads. Using a researcher-made questionnaire validated by five school heads (Cronbach's alpha = .974), data were gathered from 148 teachers and 13 school heads through stratified sampling. Both groups rated the level of integration across five dimensions - cross-disciplinary content knowledge, curriculum alignment, interdisciplinary planning and teamwork, resource selection and differentiation, and reflection and assessment - as Highly Practiced. A significant difference emerged between teachers' and school heads' perceptions of cross-disciplinary content knowledge ( $p = .04$ ), while the remaining dimensions showed no significant difference. Years of teaching experience were significantly associated with practices in interdisciplinary planning and teamwork and in reflection and assessment, and relevant training attended was significantly associated with curriculum alignment. Teachers also reported a range of persistent challenges, most notably limited access to technology and insufficient instructional time, all rated Highly Encountered. Building on these findings, the study proposes a four-area capacity-building program addressing content knowledge, collaborative planning, resource utilization, and reflective assessment practice to strengthen curriculum integration among elementary teachers.

## Introduction

Curriculum integration has increasingly been recognized as a pedagogical approach that helps learners connect classroom content to real-world experience. Rather than treating subjects as isolated blocks of instruction, an integrated curriculum weaves disciplines together around shared themes, questions, or skills, allowing learners to build understanding that transfers beyond a single subject area (Dillon, 2022; Leibold, 2011). Drake and Burns (2004) described three broad paradigms through which this integration can occur: multidisciplinary integration, which threads a common theme through separate subjects; interdisciplinary integration, which organizes instruction around learning outcomes shared across subjects; and transdisciplinary integration, which centers the curriculum on learners' own questions and real-life concerns.

For integration to succeed, it must be deliberately planned. Jacoby and Howard (2015) outlined a sequence of considerations for building an integrated curriculum, from selecting achievable outcomes and appropriate partners to preparing learners, addressing logistics, and building in reflection. Research consistently frames curriculum integration as learner-centered: it invites students to take an active role in shaping what and how they learn (Brown, 2016; Pate, 2013), and its ultimate purpose, as Springer (2006) argued, is to help learners live better lives now rather than simply accumulate information for later use.

Studies of integration in practice, however, reveal a gap between the concept and its implementation. Stinson, Harkness, Meyer, and Stallworth (2009) found that middle school teachers did not share a common understanding of what math-science integration actually looked like, while Bishop, Allen-Malley, and Brinegar (2007) and Brinegar and Bishop (2011) found that learners' initial skepticism toward integrated units gave way to engagement once the underlying processes became clear to them. MacMath, Wallace, and Chi (2009) further observed that although integration supported learners' self-assessment through hands-on tasks, learners still struggled with discipline-specific skills embedded within integrated

projects, and teachers could not always monitor and redirect that struggle in time. These findings point to a recurring theme in the literature: integration is broadly endorsed in principle, but its quality in practice depends heavily on how well teachers are prepared and supported to carry it out.

In the Philippine context, the Enhanced Basic Education Act of 2013 (Republic Act No. 10533) provides the policy foundation for an education system that is complete, adequate, and integrated, and calls for graduates equipped not only with subject knowledge but with the capacity for creative and critical thinking across contexts. Translating this mandate into daily classroom practice, however, is left largely to individual teachers and schools. It is against this backdrop that the present study examined how public elementary school teachers in the Magalang South District, Division of Pampanga, integrated learning content within and across disciplines during School Year 2023-2024, how their practices compared with the perceptions of their school administrators, and what problems they encountered along the way. The findings were intended to inform a capacity-building program responsive to teachers' actual needs.

The study drew on Jerome Bruner's constructivist theory, which holds that meaningful learning involves not only acquiring a culture's existing concepts and problem-solving procedures but developing the capacity to construct such understanding independently. Cognitive growth, in this view, emerges from the interplay between learners' innate capacities and the cultural tools that amplify them. Gordon (2009) extended this idea by arguing that teachers should design experiences that position learners as active, scholarly participants who reconcile new instruction with their existing knowledge and social context - an orientation well suited to an integrated curriculum, which by design asks learners to draw connections across subject boundaries rather than absorb them in isolation.

#### *Research Questions*

The study specifically sought answers to the following questions: (1) What is the profile of elementary teachers in terms of age, years of teaching, educational attainment, and relevant trainings attended? (2) What is the level of integration of learning content across disciplines as perceived by administrators and teachers themselves, along cross-disciplinary content knowledge, curriculum alignment, interdisciplinary planning and teamwork, resource selection/instructional strategies/differentiation, and reflection and feedback/assessment and evaluation? (3) Is there a significant difference between administrators' and teachers' perceptions of the level of practice in integrating content within and across disciplines? (4) Is there a significant difference in teachers' level of practice when grouped according to their profile? (5) What problems do elementary teachers encounter in integrating content within and across disciplines? (6) What capability-building program may be proposed based on the findings?

#### *Assumptions of the Study*

Two null hypotheses guided the statistical analysis, each tested at the .05 level of significance: (1) there is no significant difference between administrators' and teachers' perceptions of the level of practice in integrating content within and across disciplines; and (2) there is no significant difference in teachers' level of practice when grouped according to their profile.

## **Methodology**

This descriptive-comparative study was conducted among public elementary school teachers and school heads in the Magalang South District, Division of Pampanga, during School Year 2023-2024. Descriptive research is well suited to this purpose because it allows the systematic observation and description of a population's characteristics without manipulating them (Shuttleworth, 2008), while the comparative element enabled the researcher to test whether perceptions of practice differed meaningfully between teachers and administrators, and among teachers grouped by profile (De Guzman, 2017).

The study's conceptual framework translates the constructivist and legal foundations discussed above into an input-process-output model (Figure 1). The input consists of the teacher-respondents' profile, their and their school heads' perceived level of integration across the five practice dimensions, and the problems teachers encounter in integrating content within and across disciplines. These inputs were processed through the administration of a validated survey questionnaire and both descriptive statistics (frequency, percentage, and weighted mean) and comparative statistics (independent-samples t-test and one-way analysis of variance). The resulting output is a capacity-building program designed to respond directly to the needs identified through this process, with a feedback loop returning refined practice back into the classroom for continuous improvement.

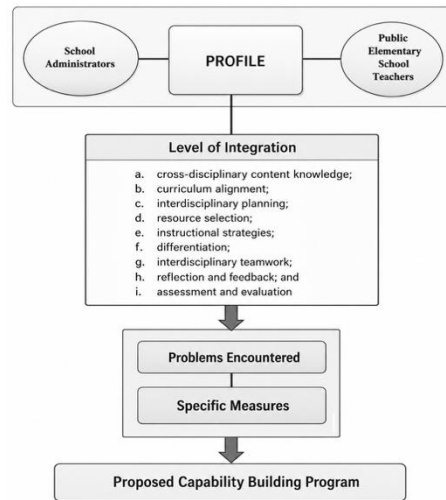


Figure 1. Research Paradigm of the Study

The conceptual framework grounded in the Enhanced Basic Education Act of 2013 (Republic Act No. 10533) mandates a complete, adequate, and integrated system of basic education geared toward learners who are competent, reflective, and capable of critical thinking across contexts. The law's emphasis on an integrated curriculum - one that cuts across subject boundaries and draws on the inter-relatedness of all curricular areas - informed the operational definitions and the five practice dimensions used to measure integration in this study, as well as the decision to examine both teachers' self-perceptions and school heads' perceptions of the same practices. Taken together, the constructivist and policy-based frameworks motivated a study design capable of capturing not just whether integration was practiced, but how consistently it was understood and enacted across the different actors responsible for it.

## Results and Discussion

### Profile of the Teacher-Respondents

Table 1 summarizes the demographic profile of the 148 teacher-respondents. The largest age group, 31-40 years, accounted for 38.51% of respondents, followed closely by the 20-30 bracket at 35.14%; only 8.11% were 51-60 years old, suggesting that the teaching force in the district is concentrated in early- to mid-career adulthood. In terms of experience, 61.49% had served for 1-10 years - consistent with Strong's (2007) observation that veteran and novice teachers differ largely in the depth of practice-based expertise they accumulate, which this relatively young workforce has not yet had the years to build. Most respondents held a bachelor's degree (57.43%), with 40.54% having completed a master's degree and 2.03% a doctorate, a pattern Celzo (2008) links to graduate study serving as a catalyst for professional competence. Among relevant trainings, participation in SPG-related and K-12 trainings was most common (41.89% and 34.46%, respectively), while only 2.70% had attended YES-O training, indicating uneven but generally adequate exposure to program-related professional development.

| Category                       | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Age                            |           |            |
| 20-30                          | 52        | 35.14      |
| 31-40                          | 57        | 38.51      |
| 41-50                          | 27        | 18.24      |
| 51-60                          | 12        | 8.11       |
| Years of Teaching Experience   |           |            |
| 1-10                           | 91        | 61.49      |
| 11-20                          | 46        | 31.08      |
| 21-30                          | 9         | 6.08       |
| 31-40                          | 2         | 1.35       |
| Highest Educational Attainment |           |            |

|                             |     |        |
|-----------------------------|-----|--------|
| Bachelor's Degree           | 85  | 57.43  |
| Master's Degree             | 60  | 40.54  |
| Doctoral Degree             | 3   | 2.03   |
| Relevant Trainings Attended |     |        |
| ELLN                        | 21  | 14.19  |
| GAD                         | 10  | 6.76   |
| K-12                        | 51  | 34.46  |
| SPG                         | 62  | 41.89  |
| YES-O                       | 4   | 2.70   |
| Total (N = 148)             | 148 | 100.00 |

Table 1. Profile of the Teacher-Respondents (N = 148)

*Level of Integration of Learning Content Across Disciplines*

Across all five dimensions measured, both teachers and school heads rated the level of integration as Highly Practiced, with school heads consistently assigning somewhat higher ratings than teachers themselves (Table 2). Teachers' self-ratings ranged narrowly from 3.37 (reflection and feedback, assessment and evaluation) to 3.42 (cross-disciplinary content knowledge and curriculum alignment), while school heads' ratings ranged from 3.43 to 3.55.

Within cross-disciplinary content knowledge, both groups agreed that developing a deep understanding of the content areas to be integrated was the most consistently practiced behavior, echoing Dym, Agogino, Eris, Frey, and Leifer's (2005) observation that real-world problems are inherently interdisciplinary and demand teachers equipped with cross-cutting problem-solving skills rather than single-subject expertise (Richardson, Cilliers, & Lissack, 2001). For curriculum alignment, teachers rated collaborating with colleagues to refine alignment efforts as their strongest practice, while school heads placed more weight on recognizing the scope and sequence needed for a logical progression of integrated lessons - both consistent with Watermeyer's (2011) framing of alignment as the totality of links between elements of a learner's experience, and with Bay's (2016) observation that alignment is shaped by teachers' beliefs and self-efficacy in contextualizing curriculum.

Interdisciplinary planning and teamwork practices centered on identifying common learning objectives across disciplines, rated highly by both groups, consistent with Wiles and Bondi's (2014) view that curriculum implementation succeeds when instructional designs remain consistent enough for teachers to sustain a shared structure across subjects. In resource selection, instructional strategies, and differentiation, both groups agreed that the proficient use of digital resources and technology tools stood out as the most consistently practiced behavior. Finally, in reflection and feedback, assessment and evaluation, teachers rated analyzing learner performance data to inform instructional adjustment as their leading practice, while school heads rated three behaviors - seeking collaborative feedback, analyzing performance data, and accessing relevant professional development - equally highly. Overall, the consistently high ratings across dimensions and respondent groups suggest that integration is an established, if unevenly supported, feature of classroom practice in the district.

| Dimension                                                         | Teachers Mean | DR | School Heads Mean | DR |
|-------------------------------------------------------------------|---------------|----|-------------------|----|
| Cross-Disciplinary Content Knowledge                              | 3.42          | HP | 3.52              | HP |
| Curriculum Alignment                                              | 3.42          | HP | 3.55              | HP |
| Interdisciplinary Planning and Teamwork                           | 3.38          | HP | 3.43              | HP |
| Resource Selection, Instructional Strategies, and Differentiation | 3.39          | HP | 3.54              | HP |
| Reflection and Feedback, Assessment and Evaluation                | 3.37          | HP | 3.46              | HP |

Legend: 3.26-4.00 Highly Practiced (HP); 2.50-3.25 Moderately Practiced (MP); 1.76-2.49 Slightly Practiced (SP); 1.00-1.75 Not Practiced (NP).

Table 2. Summary of Overall Weighted Means: Level of Integration of Learning Content Across Disciplines

*Difference Between Administrators' and Teachers' Perceptions*

A significant difference emerged only in perceptions of cross-disciplinary content knowledge, where school heads rated teachers' practice higher ( $M = 3.85$ ) than teachers rated themselves ( $M = 3.60$ ),  $t = -2.19$ ,  $p = .04$  (Table 3). The remaining four dimensions - curriculum alignment, interdisciplinary planning and teamwork, resource selection and differentiation, and reflection and assessment - showed no significant difference ( $p = .29$ ,  $.73$ ,  $.58$ , and  $.35$ , respectively), indicating that teachers and school heads largely share a common view of how integration unfolds in the classroom, with content-area

depth being the one area where administrators appear to credit teachers with more capability than teachers claim for themselves.

| Indicator                                                         | Teachers Mean | School Heads Mean | t-value | p-value | Decision        |
|-------------------------------------------------------------------|---------------|-------------------|---------|---------|-----------------|
| Cross-Disciplinary Content Knowledge                              | 3.60          | 3.85              | -2.19   | 0.04*   | Significant     |
| Curriculum Alignment                                              | 3.54          | 3.69              | -1.09   | 0.29    | Not Significant |
| Interdisciplinary Planning and Teamwork                           | 3.49          | 3.54              | -0.35   | 0.73    | Not Significant |
| Resource Selection, Instructional Strategies, and Differentiation | 3.45          | 3.54              | -0.57   | 0.58    | Not Significant |
| Reflection and Feedback, Assessment and Evaluation                | 3.47          | 3.62              | -0.97   | 0.35    | Not Significant |

\*Significant at the 0.05 level of significance.

Table 3. Difference Between Administrators and Teachers on the Level of Practice in Integrating Content Within and Across Disciplines

#### Difference in Teachers' Practice When Grouped by Profile

Teachers' age and highest educational attainment were not significantly related to their integration practices across any of the five dimensions (Table 4), suggesting that these practices are shaped less by a teacher's stage of life or academic credential than by other factors. Years of teaching experience, however, was significantly associated with practice in interdisciplinary planning and teamwork ( $F = 2.92, p = .04$ ) and in reflection and feedback, assessment and evaluation ( $F = 4.61, p = .00$ ) - consistent with Kurz's (2011) argument that familiarity with the intended curriculum, built up over years of practice, shapes how a teacher enacts it, and with Coe, Aloisi, Higgins, et al.'s (2014) point that both content knowledge and pedagogical content knowledge take time to mature. Relevant trainings attended was significantly associated only with curriculum alignment ( $F = 2.55, p = .04$ ); Watermeyer (2011) suggests this may reflect the fact that curriculum is not a fixed artifact but one that continues to evolve, so ongoing training gives teachers repeated opportunities to revisit and refine how their lessons align with it.

| Profile Variable / Dimension                                      | F-value | p-value | Decision    |
|-------------------------------------------------------------------|---------|---------|-------------|
| Age                                                               |         |         |             |
| Cross-Disciplinary Content Knowledge                              | 1.53    | 0.21    | NS          |
| Curriculum Alignment                                              | 1.45    | 0.23    | NS          |
| Interdisciplinary Planning and Teamwork                           | 0.43    | 0.73    | NS          |
| Resource Selection, Instructional Strategies, and Differentiation | 0.56    | 0.64    | NS          |
| Reflection and Feedback, and Assessment and Evaluation            | 0.44    | 0.73    | NS          |
| Years of Teaching Experience                                      |         |         |             |
| Cross-Disciplinary Content Knowledge                              | 0.49    | 0.69    | NS          |
| Curriculum Alignment                                              | 0.21    | 0.89    | NS          |
| Interdisciplinary Planning and Teamwork                           | 2.92    | 0.04*   | Significant |
| Resource Selection, Instructional Strategies, and Differentiation | 1.03    | 0.38    | NS          |
| Reflection and Feedback, and Assessment and Evaluation            | 4.61    | 0.00**  | Significant |
| Highest Educational Attainment                                    |         |         |             |
| Cross-Disciplinary Content Knowledge                              | 0.60    | 0.55    | NS          |
| Curriculum Alignment                                              | 0.36    | 0.70    | NS          |
| Interdisciplinary Planning and Teamwork                           | 0.16    | 0.85    | NS          |
| Resource Selection, Instructional Strategies, and Differentiation | 0.28    | 0.76    | NS          |
| Reflection and Feedback, and Assessment and Evaluation            | 0.23    | 0.80    | NS          |
| Relevant Trainings Attended                                       |         |         |             |
| Cross-Disciplinary Content Knowledge                              | 0.92    | 0.46    | NS          |
| Curriculum Alignment                                              | 2.55    | 0.04*   | Significant |
| Interdisciplinary Planning and Teamwork                           | 0.51    | 0.73    | NS          |
| Resource Selection, Instructional Strategies, and Differentiation | 0.27    | 0.89    | NS          |
| Reflection and Feedback, and Assessment and Evaluation            | 0.93    | 0.45    | NS          |

\*Significant at the 0.05 level of significance. \*\*Significant at the 0.01 level of significance. NS = Not Significant.

Table 4. Difference in the Level of Practice of Elementary Teachers in Integrating Content Within and Across Disciplines When Grouped According to Profile

*Problems Encountered by Elementary Teachers*

Table 5 presents the challenges teachers reported in integrating content within and across disciplines. All ten problems surveyed were rated Highly Encountered, with an overall average weighted mean of 3.44. The two most pressing challenges - limited access to technology and supplementary content, and insufficient instructional time to plan, implement, and assess cross-disciplinary lessons thoroughly - both registered a mean of 3.64. Wenzel (2016) identifies time constraints as a persistent threat to curriculum alignment, particularly when competing school and national policy demands leave little room for the collaborative planning that integration requires. The least, though still highly, encountered problems were resistance from colleagues or administrators hesitant to embrace cross-disciplinary approaches, and school systems that maintain strict subject-specific divisions (both  $M = 3.26$ ) - figures that, even at the lower end of the range, indicate that structural and cultural barriers to integration remain a live concern rather than a resolved one in the district.

| Problems Encountered                                                                                                                                        | Mean | DR |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|
| Balancing the demands of a packed curriculum while trying to integrate content across multiple disciplines can be challenging.                              | 3.58 | HE |
| Limited access to technology and supplementary content hinders effective cross-disciplinary integration.                                                    | 3.64 | HE |
| Time limitations within the school day hinder the ability to plan, implement, and assess cross-disciplinary lessons thoroughly.                             | 3.64 | HE |
| Many educators have not received formal training or professional development to develop expertise in cross-disciplinary instruction.                        | 3.37 | HE |
| Ensuring that assessments align with integrated learning objectives poses problems, making it challenging to measure learner progress accurately.           | 3.54 | HE |
| Educators face resistance from colleagues or administrators who are hesitant to embrace cross-disciplinary approaches, creating obstacles to collaboration. | 3.26 | HE |
| School systems that maintain strict subject-specific curricular divisions impede efforts to integrate content effectively.                                  | 3.26 | HE |
| Meeting the diverse needs and readiness levels of learners in cross-disciplinary settings proves complex and demands additional strategies.                 | 3.34 | HE |
| Engaging learners consistently in cross-disciplinary lessons, especially when they are accustomed to more traditional teaching methods, is a challenge.     | 3.37 | HE |
| Developing assessment strategies that effectively evaluate integrated knowledge and skills poses difficulties.                                              | 3.37 | HE |
| Average Weighted Mean                                                                                                                                       | 3.44 | HE |

Legend: 3.26-4.00 Highly Encountered (HE); 2.50-3.25 Moderately Encountered (ME); 1.76-2.49 Slightly Encountered (SE); 1.00-1.75 Not Encountered (NE).

Table 5. Problems Encountered by Elementary Teachers in Integrating Content Within and Across Disciplines

*Proposed Capacity-Building Program*

Building on these findings, a four-area capacity-building program is proposed to strengthen curriculum integration among the district's elementary teachers (Table 6). The program pairs each identified need with concrete strategies - seminars, workshops, and trainings delivered through partnerships with teacher-education institutions, school heads, department heads, and master teachers - and defines success indicators of at least 75% teacher attainment per area. As Drake and Burns (2004) note, integration succeeds when teachers can bundle standards thoughtfully rather than address them one at a time; the proposed program is designed to give teachers the collaborative structures and technical support to do exactly that.

| Area of Concern                                                   | Objective                                                                                                              | Strategies                                                                                            | Persons Involved                                                                                                                          | Budget     | Success Indicators                                                                                                                    |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Cross-Disciplinary Content Knowledge and Curriculum Alignment     | Develop the cross-disciplinary content knowledge of teachers and align curriculum to meet educational standards.       | Seminars, workshops, trainings                                                                        | Teacher education institutions, school heads, department heads, master teachers                                                           | Php 50,000 | 75% and above of teachers develop deep understanding of content areas and align lessons with curriculum guidelines.                   |
| Interdisciplinary Planning and Teamwork                           | Foster interdisciplinary planning skills through effective teamwork among team members.                                | Workshops, seminars, trainings                                                                        | National Educators Academy of the Philippines (NEAP), school heads, department heads, master teachers                                     | Php 80,000 | 75% and above of teachers promote collaborative planning by identifying common objectives and sharing resources.                      |
| Resource Selection, Instructional Strategies, and Differentiation | Build capacity in resource selection and instructional strategies for differentiated teaching and learning delivery.   | Seminars, workshops, materials and learning resources, pedagogies and approaches to learning delivery | Bureau of Learning Delivery, Bureau of Learning Resources, Learning Resource (LR) Portal, school heads, department heads, master teachers | Php 50,000 | 75% and above of teachers proficiently use digital resources and select appropriate materials for cross-disciplinary instruction.     |
| Reflection and Feedback, and Assessment and Evaluation            | Foster a culture of reflection and feedback toward continuous teaching improvement and evidence-based decision-making. | Seminars, workshops, trainings                                                                        | Bureau of Education Assessment, NEAP, school heads, department heads, master teachers                                                     | Php 50,000 | 75% and above of teachers engage in self-reflection, solicit feedback, analyze performance data, and access professional development. |

Table 6. Proposed Capacity-Building Program to Address the Identified Needs of Public Elementary School Teachers

## Conclusion and Implications

Taken together, the findings portray a teaching workforce that is relatively young in service years but already practicing curriculum integration at a consistently high level, according to both their own and their school heads' assessments. Teachers and administrators share a largely common view of how well integration is being carried out, with the one notable gap being content-area depth, where school heads appear to credit teachers with more capability than teachers claim for themselves. This alignment in perception, together with the significant role that years of experience play in interdisciplinary planning and reflective practice, suggests that integration competence in this district develops substantially through accumulated classroom experience rather than through formal credentials alone.

At the same time, the persistence of highly encountered challenges - especially limited technological resources and insufficient instructional time - indicates that current levels of practice are being sustained despite structural constraints rather than because those constraints have been resolved. This carries a direct implication for how integration is supported at the school and district level: investment in technology and materials, and protected time for interdisciplinary planning, are likely to yield more improvement than further encouragement to integrate on its own.

The proposed capacity-building program responds to this by targeting the four areas most closely tied to the study's findings - content knowledge and curriculum alignment, interdisciplinary planning and teamwork, resource selection and differentiation, and reflective assessment practice - rather than treating integration as a single, undifferentiated skill. Its approval and implementation by school and division leadership, alongside sustained encouragement for teachers to pursue relevant training, would extend the strong practices already observed in the Magalang South District to a more evenly

distributed and better-resourced foundation. A similar study with a larger and more geographically varied sample is recommended to determine how well these patterns generalize beyond this district.

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## Competing Interests Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

## Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to the confidentiality assurances given to the teacher-respondents and school heads of the Magalang South District, Division of Pampanga.

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## Appendices

### *Appendix A. Letter of Request to Conduct the Study*

A formal letter requesting permission to conduct the study was submitted to the Schools Division Superintendent of the Division of Pampanga prior to data collection, in accordance with standard research protocol for public school research.

### *Appendix B. Survey Questionnaire (Summary of Content)*

The questionnaire consisted of three parts. Part I gathered the teacher-respondents' profile (age, years of teaching in public school, highest educational attainment, and relevant trainings attended). Part II measured the level of practice in integrating content within and across disciplines along five sub-scales - (A) Cross-Disciplinary Content Knowledge, (B) Curriculum Alignment, (C) Interdisciplinary Planning and Teamwork, (D) Resource Selection, Instructional Strategies, and Differentiation, and (E) Reflection and Feedback, Assessment and Evaluation - each rated on a four-point scale (4 = Strongly Agree/Highly Practiced to 1 = Strongly Disagree/Not Practiced). Part III measured the problems encountered by teachers in integrating content, using the same four-point response format (4 = Strongly Agree/Highly Encountered to 1 = Strongly Disagree/Not Encountered). The full item pool for Part II and Part III is available from the corresponding author upon request.

### *Appendix C. Sample Statistical Computations*

Sample outputs of the frequency and percentage distribution, weighted mean computation, independent-samples t-test, and one-way analysis of variance used in this study are available from the corresponding author upon request.