

Original Article

Multidisciplinary Teaching Strategies and Cultural Responsiveness of Teachers in Public Elementary School

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Received: 15 November 2025; Revised: 29 January 2026;
Accepted: 03 February 2026; Published: 04 February 2026

Abstract

Multidisciplinary instruction connects subject areas, which in diverse classrooms requires leveraging learners' cultural resources. This correlational quantitative study examined the relationship between multidisciplinary teaching strategies and cultural responsiveness among 132 public elementary teachers in Manay South District, Davao Oriental, Philippines. Findings revealed that teachers reported high levels of both strategies and responsiveness. Statistical analysis revealed a strong positive relationship, with multidisciplinary teaching significantly predicting cultural responsiveness. The findings suggest that efforts to strengthen teachers' capacity for integrated instruction can align with and reinforce culturally responsive practices in multilingual and diverse elementary settings.

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Volume 2, Issue 2,
June 2026

Keywords: cultural responsiveness, correlational analysis, elementary teachers, multidisciplinary teaching, Philippines

1. Introduction

Across basic education systems, calls for curriculum integration have grown as schools face complex learning goals that cut across disciplinary boundaries. Integrated and multidisciplinary instruction can help students see relationships among ideas, transfer knowledge to new contexts, and engage with authentic problems that mirror everyday life. Recent syntheses note that interdisciplinary and cross-curricular approaches in K to 12 settings have expanded in both research and policy, although implementation quality varies and depends heavily on teacher expertise and local conditions (Cohen et al., 2024). Meta-analytic evidence from STEM contexts also indicates that interdisciplinary teaching ability can improve when teachers receive targeted supports and clear instructional models (Wu et al., 2024). These patterns

underscore a central issue for practice in elementary schools: integration is not only a curriculum design choice, it is a professional capacity that teachers must learn, enact, and sustain.

At the same time, classrooms have become more linguistically and culturally diverse, which raises the stakes for culturally responsive practice. Systematic reviews highlight that culturally responsive practice involves both what teachers teach and how they teach, including instructional choices and relational routines that draw on learners' cultural knowledge, lived experience, and home communication styles (Franco et al., 2024). Yet measurement studies also warn that culturally responsive practice often relies on single-informant surveys and that validity evidence remains uneven across instruments, which calls for careful interpretation of self-report data (Franco et al., 2024). Despite measurement challenges, a growing body of empirical work links culturally responsive approaches to student engagement and related proximal outcomes, especially when schools pair professional learning with data-informed coaching models (Debnam et al., 2024).

In many contexts, curriculum integration and cultural responsiveness intersect in everyday classroom decisions. Integrated units often require teachers to select examples, texts, and tasks that represent learners' communities, and to support participation through language-sensitive scaffolds. When teachers connect subject matter to community life, students can interpret content through familiar frames, which may strengthen motivation and persistence. Large-scale intervention research suggests that culturally responsive teaching and identity affirmation can support student engagement, belonging, and achievement, although effects vary with implementation quality and context (Zeng et al., 2025). Project-based learning research, which often overlaps with integrated and multidisciplinary design, also shows positive effects on learning outcomes across studies, which supports the value of coherent tasks that link concepts and purposes (Zhang & Ma, 2023).

Philippine public elementary schools operate within multilingual communities where learners bring diverse linguistic repertoires, local histories, and cultural norms into classroom interaction. Teachers who align instruction with these realities must make choices about language use, curriculum examples, and participation structures that do not marginalize students. In such settings, multidisciplinary teaching strategies may serve as a practical pathway toward cultural responsiveness because integration asks teachers to build bridges between formal curriculum and learners' lived worlds. However, empirical evidence on how these two constructs relate in local public-school settings remains limited.

This study addressed that gap by examining teachers' self-reported multidisciplinary teaching strategies and cultural responsiveness in public elementary schools in Davao Oriental. Specifically, it assessed the level of multidisciplinary teaching strategies, assessed the level of cultural responsiveness, tested the relationship between multidisciplinary teaching strategies and cultural responsiveness, and examined whether multidisciplinary teaching strategies predicted cultural responsiveness through regression analysis. Clarifying these links can inform

professional learning priorities for teachers and school leaders who aim to strengthen inclusive practice while meeting standards-based curriculum expectations.

2. Methodology

This study applied a non-experimental quantitative design with correlational analysis to examine the relationship between multidisciplinary teaching strategies and cultural responsiveness among public elementary school teachers. The study site included public elementary schools in Manay South District, Division of Davao Oriental, Philippines, and data collection took place during School Year 2021 to 2022. The respondents were 132 teachers assigned in the participating public elementary schools. The researcher sought administrative approval through formal endorsement procedures and coordinated schedules with school heads to support survey distribution while minimizing disruption to instruction. Participation was voluntary, and responses were collected in a manner that protected confidentiality and reduced social pressure within schools.

Data were gathered through a structured questionnaire with two main parts. The first part measured multidisciplinary teaching strategies across three domains: integrative practice, disciplinary understanding, and learning connections. The second part measured cultural responsiveness across four domains: attention to students' ethnic background, teachers' role in supporting culturally inclusive classrooms, sensitivity to language, and inclusive curriculum. Items used a 5-point Likert response format, and mean scores were interpreted using anchored descriptive categories that ranged from very low to very high.

Data analysis used descriptive statistics to summarize domain means and overall means for both constructs. Pearson product moment correlation tested the strength and direction of the association between multidisciplinary teaching strategies and cultural responsiveness. Simple linear regression assessed whether multidisciplinary teaching strategies significantly predicted cultural responsiveness. Statistical decisions used an alpha level of 0.05.

3. Results

Table 1 shows a high overall mean for multidisciplinary teaching strategies ($M = 3.45$). Teachers reported high levels for integrative practice ($M = 3.57$) and disciplinary understanding ($M = 3.80$), and a moderate level for learning connections ($M = 2.98$).

Table 2 shows a high overall mean for cultural responsiveness ($M = 3.25$). Means were high for attention to students' ethnic background ($M = 3.55$), sensitivity to language ($M = 3.55$), and inclusive curriculum ($M = 3.56$), while teachers' role had a moderate mean ($M = 3.32$).

Table 1. Summary of multidisciplinary teaching strategies (n = 132).

Domain	Mean	Descriptive level
Integrative	3.57	High
Understanding	3.80	High
Connections	2.98	Moderate
Overall	3.45	High

Table 2. Summary of cultural responsiveness (n = 132).

Domain	Mean	Descriptive level
Students Ethnic Background	3.55	High
Teachers Role	3.32	Moderate
Sensitivity to Language	3.55	High
Inclusive Curriculum	3.56	High
Overall	3.25	High

Table 3 presents a strong positive correlation between multidisciplinary teaching strategies and cultural responsiveness ($r = .860, p < .001$).

Table 3. Correlation between multidisciplinary teaching strategies and cultural responsiveness.

Variables	r	p
Multidisciplinary teaching strategies and cultural responsiveness	0.860	< .001

Table 4 presents the regression model in which multidisciplinary teaching strategies significantly predicted cultural responsiveness ($R^2 = .836, p < .001$).

Table 4. Simple linear regression predicting cultural responsiveness from multidisciplinary teaching strategies.

Model	df	R ²	p	Decision
Overall model	1, 132	0.836	< .001	Reject Ho

4. Discussion

The findings indicate that teachers reported frequent use of multidisciplinary strategies, with particularly strong scores for disciplinary understanding and integrative practice. This pattern aligns with the broader literature that frames interdisciplinary teaching as a professional competence that grows when teachers work with clear frameworks for connecting concepts and purposes across subjects (Cohen et al., 2024). Elementary settings may support such integration because teachers often handle multiple subjects and can coordinate time, tasks, and assessment in a way that subject specialists cannot. At the same time, the moderate score for learning

connections suggests that teachers may integrate content at the level of lesson design while still finding it difficult to sustain connections that link classroom work to wider community contexts and to learners' everyday language practices. Meta-analytic evidence in STEM education shows that structured programs can strengthen interdisciplinary teaching ability, which suggests that targeted professional learning can address these gaps when it combines content integration with pedagogical routines that help students articulate connections (Wu et al., 2024).

Teachers also reported a high level of cultural responsiveness, with strengths in attention to students' ethnic background, sensitivity to language, and inclusive curriculum. These dimensions map onto widely cited conceptualizations of culturally responsive practice that emphasize asset-based views of learners, curricular relevance, and interactional choices that invite participation (Franco et al., 2024). The moderate score for teachers' role may signal constraints that teachers perceive at the institutional level. Teachers may recognize the importance of culturally responsive practice but feel limited by time, materials, assessment demands, or uncertainty about how far they can adapt curriculum within prescribed standards. Research on culturally responsive measurement also shows that self-report scores often capture beliefs and intentions more easily than observed practice, which supports the need for school-level supports that translate commitment into routine classroom action (Franco et al., 2024).

The strongest contribution of the study is the large association between multidisciplinary teaching strategies and cultural responsiveness. One plausible explanation is that integration work requires teachers to locate meaningful contexts for learning, and culturally responsive practice offers a principled way to select those contexts. When teachers design integrated tasks, they must decide which community examples to use, whose stories to include, and which languages and discourse routines will support comprehension and participation. Those decisions naturally overlap with culturally responsive planning. Intervention research provides evidence that culturally responsive models can strengthen proximal outcomes such as teacher self-efficacy and student engagement when professional learning and coaching support practical classroom routines (Debnam et al., 2024). In parallel, project-based learning research suggests that coherent tasks with clear purposes can improve learning outcomes across studies, which indicates that integrated designs can benefit students when teachers align tasks with authentic contexts (Zhang & Ma, 2023).

Regression results also indicate that multidisciplinary teaching strategies explained a large share of variance in cultural responsiveness. Because this study used cross-sectional survey data, the result does not establish causality. Still, it offers a strong signal that the competencies may develop together in practice. Integrated instruction can create repeated moments where teachers invite students to draw on home knowledge, interpret texts through local frames, and use language flexibly to express understanding. These are key conditions for culturally responsive classrooms. Recent mixed-methods evidence also suggests that culturally responsive teaching and identity affirmation can support engagement, belonging, and achievement, which

reinforces the idea that inclusive practice is not an add-on but a core driver of learning conditions (Zeng et al., 2025).

Several implications follow for teacher development and school leadership. Professional learning can treat interdisciplinary planning and cultural responsiveness as linked capacities rather than separate initiatives. Training that focuses only on integration techniques, such as thematic units or project-based tasks, may fall short if it does not also address language sensitivity, representation, and the social dynamics of participation. Conversely, culturally responsive training may be more actionable when it is embedded in curriculum design cycles where teachers build integrated units, test them in classrooms, and revise them with feedback from students and peers. Measurement work also suggests that schools benefit from combining self-report data with student report, observation, and artifacts of instruction to strengthen validity and guide improvement (Franco et al., 2024).

The study has limitations that merit attention. The sample came from one district, which limits generalizability to other regions with different linguistic ecologies and resource conditions. Measures relied on self-report and may reflect social desirability. The regression output available in the dataset summarized model fit but did not include coefficient estimates, which limits interpretation of practical effect sizes. Future studies can include multi-informant measures, classroom observation, and model specifications that test which dimensions of multidisciplinary teaching most strongly relate to each facet of cultural responsiveness. Longitudinal designs and professional learning evaluations could also test whether growth in integrated instruction precedes growth in culturally responsive practice or whether reciprocal development occurs.

5. Conclusion

This study documented high self-reported levels of multidisciplinary teaching strategies and cultural responsiveness among public elementary school teachers in Davao Oriental. It also found a strong positive association between the constructs and evidence that multidisciplinary teaching strategies significantly predicted cultural responsiveness. The results support the view that integrated instruction and culturally responsive practice are closely linked in everyday teaching. Programs that strengthen interdisciplinary planning, language-sensitive scaffolds, and inclusive curriculum design may help schools advance both learning coherence and equity in multilingual elementary settings.

Acknowledgment

Sincere appreciation is given to all peer reviewers for their valuable comments and suggestions, which helped the author to improve the quality of the manuscript.

Conflict of Interest Statement

The authors declare no conflict of interest.

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Author Contributions: Mamparo, C.A., Baguio, J.; Study design, method conception, data collection, data analysis and manuscript writing