

Contextualized and Culturally Relevant Mathematics Teaching in Grade 4: Practices, Challenges, and Support Systems among Public School Teachers

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Date Submitted:

May 29, 2026

Date Accepted:

August 15, 2026

Date Published:

October 02, 2026

DOI:

10.5281/zenodo.23094392

ABSTRACT

This study examined the implementation of contextualized and culturally relevant Mathematics teaching among Grade 4 public school teachers in the Schools Division of Manila during School Year 2025–2026. Specifically, it investigated teachers' demographic profile, level of implementation, extent of challenges encountered, and availability of support systems. It also determined significant differences in implementation when grouped according to demographic variables and examined the relationships among implementation, challenges, and support systems. A descriptive quantitative research design was employed, involving 234 teachers selected through stratified random sampling. Data were collected using a validated survey questionnaire with a Cronbach's alpha of 0.91, indicating high reliability. Statistical tools such as frequency,

percentage, mean, weighted mean, One-Way ANOVA, and Pearson correlation were utilized. Findings revealed that most teachers were mid-career (55.56%) and had limited training exposure (42.74% with no training). The level of implementation of contextualized and culturally relevant Mathematics teaching was moderately implemented (General Mean = 3.09), indicating partial integration of practices. Teachers experienced highly challenging barriers, particularly in curriculum constraints, lack of contextualized materials, and insufficient training. Support systems were moderately available, suggesting gaps in leadership, professional development, and community engagement. Significant differences in implementation were found based on training exposure, while significant relationships existed among implementation, challenges, and support systems. Based on the findings, a Contextualized and Culturally Relevant Mathematics Teaching Enhancement Program was developed and found to be highly acceptable across all evaluated criteria.

Keywords: *contextualized teaching, culturally responsive pedagogy, Mathematics education, teacher challenges, support systems*

INTRODUCTION

Many Filipino Grade 4 learners continue to struggle with meaningfully connecting Mathematics concepts to their lived experiences, cultural identities, and real-world contexts. Although the K to 12 Curriculum mandates contextualization and localization, classroom practices often remain traditional and heavily textbook-driven, limiting learners' opportunities to relate mathematical ideas to familiar situations (Bernardo, 2019; SEAMEO INNOTECH, 2022). The absence of contextualized experiences results in difficulties in problem-solving, application, and conceptual understanding, especially for learners from diverse socio-cultural backgrounds in urban divisions like Manila. These gaps persist despite national directions urging teachers to implement culturally responsive strategies that recognize the cultural diversity of Filipino communities (DepEd, 2016; Gay, 2018). This

problem points to a disconnect between national expectations and actual classroom practices among Grade 4 Mathematics teachers who must navigate curriculum demands, limited resources, and varied learner needs.

The problem becomes more pressing in contexts where learners come from socioeconomically challenged households, multilingual communities, and culturally diverse neighborhoods. Studies show that when Mathematics instruction remains decontextualized, learners experience difficulty developing number sense, modeling real-life problems, and engaging meaningfully in classroom tasks (World Bank, 2021; OECD, 2020). Teachers, meanwhile, report challenges in integrating culturally relevant activities due to insufficient training, lack of materials, and minimal exposure to culturally responsive pedagogy (Pascua & Lusted, 2020; Louie, 2022). These realities underscore the need to examine how contextualized and culturally relevant Mathematics teaching is implemented in actual classroom settings, including the challenges teachers face and the support systems that influence their practice.

Recent evidence shows that the problem exists across multiple learning environments. Large-scale national studies indicate that Filipino learners continue to demonstrate low numeracy proficiency, with many struggling to apply mathematical concepts in unfamiliar contexts (World Bank, 2021; PISA, 2019; SEAMEO INNOTECH, 2022). These studies highlight the gap between policy intentions and classroom implementation. Local research in the Philippines also documents that many teachers lack adequate training in contextualized pedagogy and rely predominantly on uniform instructional materials that do not always reflect learners' cultural experiences (Bernardo, 2019; Dungo & Reganit, 2021). This mismatch hinders the formation of connections between abstract mathematical concepts and community-based contexts.

Literature Review

Teacher Demographic Profile

Studies consistently emphasize that teachers' demographic characteristics—specifically their years of teaching experience, academic rank, and training exposure—significantly influence instructional competence and pedagogical decision-making. Research shows that teachers with longer experience tend to have stronger classroom management and deeper content knowledge, which informs their ability to adapt instruction to learners' needs (Bernardo, 2019; Cruz & Javier, 2022; Reyes, 2021). Experienced teachers often demonstrate stronger confidence in contextualization practices since they have accumulated varied strategies over the years (Ocampo, 2023; Flores & Cabiles, 2020). Similarly, teachers holding higher academic positions such as Master Teacher roles generally engage more actively in instructional leadership, mentoring, and innovation (Garcia, 2022; De Vera, 2021). Their leadership responsibilities often expose them to more advanced pedagogical frameworks, increasing the likelihood of integrating culturally responsive practices in Mathematics lessons (Lopez, 2020; Ramos, 2022; Pascual, 2024).

Implementation of Contextualized and Culturally Relevant Teaching Research consistently affirms that integrating local and real-life contexts enhances learners' Mathematics comprehension and engagement. When lessons draw from familiar experiences, such as community scenarios, household activities, or local cultural practices, students are more likely to develop conceptual understanding and problem-solving skills (Aguirre & Zavala, 2020; Hammond, 2020; Louie, 2022). Filipino studies echo these findings, showing that contextualized instruction helps learners relate abstract concepts to their lived realities, thereby improving motivation and performance (Bernardo, 2019; Cruz & Javier, 2022; Pascual, 2021). Teachers who apply culturally responsive strategies—including collaborative tasks, culturally rooted examples, and learner-centered discourse—create more inclusive and meaningful classroom interactions (Gay, 2018; Ladson-Billings, 2021; Paris & Alim, 2020).

METHODS

Research Design

This study employed a descriptive quantitative research design, which focuses on systematically describing a population, situation, or phenomenon using numerical data. According to Creswell (2019), descriptive quantitative research is appropriate when a study seeks to quantify variables, identify patterns, and describe trends based on statistical analysis. In this design, data are collected through structured instruments such as surveys, allowing researchers to measure specific characteristics, conditions, or perceptions of a target population with precision (OECD, 2020).

Research Locale

The study was conducted within the public elementary schools under the jurisdiction of the Department of Education, Schools Division Office of Manila, Philippines, during the School Year 2025–2026. (Font size 11,

Participants and Sampling Technique

A total of 234 Grade 4 public school Mathematics teachers constituted the study sample. Sample size determination was executed using Slovin's formula from a total division population, and respondents were selected using stratified random sampling across school districts to ensure balanced geographic and institutional representation.

Research Instrument

Data were gathered using a structured research questionnaire validated by thirty subject matter experts. Internal consistency was verified using Cronbach's alpha, which yielded an overall coefficient of 0.91, demonstrating excellent statistical reliability.

Data Gathering

After securing ethical clearance and division permits, instruments were distributed through school heads and Learning Action Cell (LAC) coordinators. Confidentiality and anonymization protocols were strictly maintained throughout the collection and data logging phases

Data Analysis

Descriptive statistics (frequency, percentage, mean, weighted mean) summarized demographic profiles and implementation levels. Inferential statistics, including One-Way ANOVA and Pearson Product-Moment Correlation, were utilized to test for differences and relationships across variables at a 0.05 level of significance.

Ethical Consideration

The study adhered strictly to informed consent protocols under RA 10173 (Data Privacy Act of 2012) and institutional ethical standards, guaranteeing voluntary participation, full anonymity, and non-maleficence.

Table 1. *Demographic Profile of Grade 4 Public School Mathematics Teachers*

Profile Variable	Category	Frequency (f)	Percentage (%)
Years of Teaching Experience	1–4 years	40	17.09
	5–10 years	130	55.56
	More than 10 years	64	27.35
Academic Rank/Position	Teacher I–III	210	89.74
	Master Teacher I–II	24	10.26
Trainings Attended	None	100	42.74

Profile Variable	Category	Frequency (f)	Percentage (%)
	1–2 trainings	85	36.32
	3 and above	49	20.94
Total		234	100.00

Legend: $N = 234$; f = frequency; % = percentage. Percentages represent the proportion of respondents within each category.

RESULTS AND DISCUSSION

Demographic Profile Analysis

Findings in Table 1 reveal that the majority of Grade 4 Mathematics teachers fall within the 5–10 years of experience category (55.56%), signifying a mid-career teaching force. However, a significant training deficit is evident, as 42.74% of teachers have received no formal training on contextualized and culturally relevant teaching.

Level of Implementation of Contextualized Mathematics Teaching

The overall implementation of contextualized and culturally relevant Mathematics teaching was rated as *Moderately Implemented* (General Mean = 3.09). While teachers frequently use local real-life contexts in daily classroom scenarios (Mean = 3.32), they encounter challenges in developing localized instructional materials (Mean = 2.99) and integrating community knowledge and indigenous resources into formal assessment design (Mean = 2.75).

CONCLUSION

The study concludes that Grade 4 public school Mathematics teachers in Manila moderately implement contextualized and culturally relevant teaching practices. Implementation of fidelity is hampered by severe curriculum pacing constraints, lack of localized instructional resources, and insufficient targeted professional training. However, teacher training exposure significantly enhances contextualization practices, proving that structured capacity building—such as the proposed Contextualized and Culturally Relevant Mathematics Teaching Enhancement Program—is vital for embedding equity-based, culturally sustaining pedagogy in public elementary schools.

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