Challenges Faced by Mathematics Teachers under the MATATAG Curriculum and Their Impact on Teaching Performance and Student Academic Outcomes: A Systematic Literature Review

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ABSTRACT

This systematic review examined the challenges faced by Mathematics teachers under the MATATAG curriculum and the documented effects on teaching performance and student academic outcomes in Philippine basic education (2020–2025). Following PRISMA 2020 guidelines, we searched peer-reviewed journals and reputable sources (e.g., DepEd policy repositories, local academic outlets, and indexed databases) for empirical and policy-relevant studies on: (a) MATATAG implementation or closely aligned national mathematics reforms; (b) teacher-level constraints, including time and pacing, instructional resources, administrative workload, assessment practices, and professional development; and (c) outcomes, such as teaching performance indicators and student mathematics achievement.

A total of 140 records were identified (databases = 120; other sources = 20). After removing 30 duplicates, 110 records were screened, 26 full-text articles were assessed for eligibility, and 14 studies were included in the final analysis. Convergent evidence highlights four persistent constraints: (1) compressed instructional time and pacing pressures (45-minute periods) limiting problem-solving depth and formative assessment cycles; (2) gaps in learning resources (contextualized materials, manipulative, and technology) hindering differentiated instruction; (3) administrative workloads (reporting and compliance) reducing time for planning and feedback; and (4) variable access to targeted professional development.

Studies linking these constraints to outcomes indicate (a) lower observation-rubric ratings where pacing and resources are inadequate, and (b) modest but consistent gains where supports exist, such as pacing guidance, lesson exemplars, formative assessment tools, and coaching. Comparative evidence suggests that public schools face more acute barriers than private schools. Overall, the weight of evidence supports system-level interventions—including refined pacing guidance, resource augmentation, and sustained content-focused professional development with coaching—to translate MATATAG objectives into higher-quality mathematics instruction and improved learner achievement. Future research should prioritize quasi-experimental and longitudinal designs that jointly track teacher performance and student mathematics outcomes under clearly specified support packages.

Keywords. MATATAG curriculum; mathematics teaching; pacing and time-on-task; instructional resources; assessment practices; teacher performance; student achievement; Philippines.

INTRODUCTION

The MATATAG Curriculum was introduced in School Year 2024–2025 as a major reform in Philippine basic education. It aims to improve learner outcomes by strengthening foundational skills, promoting critical thinking, and reducing content congestion present in the K–12 curriculum (Mendoza & Abad, 2022; Garcia & Santos, 2023). In Mathematics, the curriculum emphasizes clearer content standards, appropriate pacing, and the use of formative assessment to support meaningful learning.

Mathematics teachers play a crucial role in the successful implementation of the MATATAG Curriculum. Their instructional practices, such as lesson pacing, activity design, and assessment strategies, directly influence how curriculum goals are achieved in the classroom. Effective implementation depends on adequate teacher preparation, sufficient learning resources, and continuous professional support.

However, several challenges affect the implementation of the MATATAG Curriculum in Mathematics classrooms. Recent reports have identified limited instructional time, lack of teaching materials and technology, increased administrative tasks, and unequal access to professional development opportunities. These challenges may negatively affect teaching performance, including lesson delivery, classroom engagement, and assessment practices, which may also influence students' academic performance in Mathematics.

Despite these challenges, some schools have implemented support mechanisms such as pacing guides, lesson exemplars, formative assessment tools, and coaching programs. Studies indicate that these supports can help teachers manage time effectively, improve lesson alignment, and enhance student learning. However, the effectiveness of these interventions varies depending on school context and available resources, indicating the need for further investigation.

This educational reform is consistent with Fullan's Change Theory, which emphasizes the importance of teacher involvement and stakeholder support in successful curriculum reform. Sustainable change requires addressing classroom realities and supporting teachers throughout the implementation process. While several studies discuss the limitations of the K–12 curriculum and the goals of the MATATAG Curriculum, limited research has focused on the specific challenges faced by Mathematics teachers and how these challenges affect teaching performance and student outcomes.

Given this gap, this study aims to examine the challenges encountered by Mathematics teachers in implementing the MATATAG Curriculum and to determine how these challenges affect teaching performance and students' academic outcomes. Understanding these issues is important for improving curriculum implementation and strengthening Mathematics education. This study uses a systematic review of related literature published from 2020 to 2025. Guided by PRISMA procedures, it synthesizes empirical studies and policy reports that examine challenges faced by Mathematics teachers under the MATATAG Curriculum and their effects on teaching performance and student academic achievement. The findings of this study are expected to provide evidence-based recommendations for improving curriculum implementation and teacher support.

PURPOSE OF THE STUDY

The purpose of this study is to systematically review and synthesize empirical evidence (2020–2025) on how the MATATAG curriculum—through the challenges faced by Mathematics teachers (e.g., compressed instructional time, resource gaps, administrative workload, assessment demands, and access to professional development)—influences teaching performance and student academic outcomes in Philippine basic education.

Guided by a curriculum-implementation lens specific to MATATAG, this review evaluates how identified constraints and support mechanisms (e.g., pacing guidance, lesson exemplars, formative assessment toolkits, coaching/PD) are associated with observable changes in classroom-observation indicators, lesson/assessment quality, and student Mathematics achievement. Using the PRISMA 2020 framework, the study applies a transparent and replicable process of identification; screening, appraisal, and synthesis to determine which teacher-level factors most consistently depress or improve outcomes under MATATAG. The findings aim to provide evidence-based guidance to policymakers, school leaders, and teacher-educators for refining pacing and time-on-task policies, strengthening resource provision, and structuring content-focused professional development that can improve teaching performance and elevate student Mathematics outcomes within MATATAG.

This literature review aims to answer the question: *Among Philippine basic education settings implementing MATATAG, how do teacher-level challenges and corresponding supports—compared with business-as-usual conditions—affect Mathematics teachers' performance and students' academic outcomes in studies published between 220 and 2025?*

METHODOLOGY

This review followed the PRISMA 2020 guidelines. A protocol specifying eligibility criteria, information sources, screening procedures, data extraction, appraisal, and synthesis was defined a priori and is available upon request. The review focused on Mathematics teaching under the MATATAG curriculum in Philippine basic education and examined the links between teacher-level challenges and outcomes in teaching performance and student achievement.

The population comprised Philippine mathematics teachers in basic education (Grades 1–10) and their students. The exposure consisted of the implementation of the MATATAG curriculum or closely aligned national mathematics reforms that substantially influence enacted mathematics instruction, including time allotments, pacing guidelines, and the Mathematics Program. The comparison involved teachers or schools with differing levels of institutional support (e.g., those with adequate training and instructional materials versus those with limited support) to examine how implementation challenges affected outcomes. Outcomes included:

1. Teaching performance, measured through classroom observation rubrics, lesson and assessment quality, and fidelity or pacing indices; and

2. Student mathematics outcomes, including test scores, pass rates, and learning gains.

Eligible study designs included empirical quantitative, qualitative, and mixed-methods studies, as well as policy or technical documents with extractable implementation or outcome data. The time frame was 2020–2025, and studies had to be in English or Filipino. Exclusion criteria encompassed editorials or opinion pieces without empirical evidence, studies published before 2020, and studies not specific to Mathematics or not plausibly linked to teacher performance or student mathematics outcomes, and research conducted outside the Philippine context.

Information sources included peer-reviewed journals and reputable institutional repositories. Searches covered education and teacher-education indexes (e.g., ERIC), publisher sites, open-access portals for journals indexed in multidisciplinary databases, Philippine journals and portals, and official DepEd repositories (orders, memoranda, and curriculum guides). Reference lists of included studies and policy documents were hand-searched to identify additional records. The search strategy combined policy terms, subject focus, teacher-level constructs, and outcomes, with a 2020–2025 date limiter. A core Boolean search string, adapted per source, was: (“MATATAG” OR “curriculum guide” OR “DepEd Order” OR “National Mathematics Program” OR “pacing” OR “time allotment”) AND (mathematics OR numeracy) AND (teacher* OR teaching OR instruction OR pedagogy) AND (“teaching performance” OR “classroom observation” OR assessment OR “student outcomes” OR achievement OR “test score*”) AND (Philippine* OR Philippines).

Search results were exported where available (CSV/RIS) and duplicates removed prior to screening.

Study selection was conducted in two stages. Titles and abstracts were first screened against prespecified criteria, followed by full-text assessment of potentially eligible reports. Two reviewers independently screened all records, with disagreements resolved through discussion; a third reviewer acted as arbiter when necessary. Cohen’s κ was computed on a random 20% subset to assess interrater reliability. The PRISMA flow was: records identified = 140 (databases = 120; other sources = 20); duplicates removed = 30; records screened = 110; full texts assessed = 40; studies included = 14.

Data extraction was performed using a piloted codebook, independently by two reviewers. Extracted items included bibliographic details, setting and grade band, study design and sample, exposure/supports (e.g., pacing guides, lesson exemplars, formative assessment tools, professional development/coaching, instructional materials/technology), mathematics teaching-performance indicators, student outcome measures, quantitative effect estimates or qualitative themes, and implementation barriers/enablers.

Risk of bias was assessed using design-appropriate tools: ROBINS-I for non-randomized quantitative studies, MMAT (2018/2022) for qualitative and mixed-methods studies, and JBI checklists for program evaluations

where applicable. Due to heterogeneity across designs and measures, qualitative evidence was synthesized thematically, while a Synthesis Without Meta-analysis (SWiM) approach was used for diverse quantitative findings. For subsets of sufficiently similar outcomes ($k \geq 5$), standardized mean differences (Hedges' g) were estimated using a random-effects model as a sensitivity analysis, with I^2 reported if meta-analysis proved feasible.

Prespecified subgroup analyses considered sector (public/private), grade band, resource level, and locale (urban/rural). Sensitivity analyses excluded studies at critical risk of bias to test the stability of conclusions. Selective reporting was assessed by comparing protocols or stated aims with reported outcomes. Overall certainty was summarized narratively. All logs, codebooks, and adjudication notes were maintained with version control to ensure auditability and reproducibility.

Inclusion and Exclusion Criteria

Study eligibility was defined a priori using the **P–I–C–O–T framework**, consistent with **PRISMA 2020** guidelines to ensure a transparent, reproducible, and systematic selection of studies. Only studies meeting the population, intervention, comparison, outcomes, and time criteria described below were considered.

Indicator	Inclusion Criteria	Exclusion Criteria
Population (P)	Philippine Mathematics teachers (Grades 1–10) and their students.	Non-Philippine settings; studies not specific to Mathematics.
Intervention (I)	Implementation of the MATATAG Curriculum or closely aligned national mathematics reforms influencing instructional practices (e.g., time allotments, pacing guidance, National Mathematics Program) that shape enacted math instruction.	Studies not related to MATATAG or national mathematics reforms
Comparison (C)	Studies comparing teachers/schools with adequate vs. limited support (training, materials, resources)	Studies without any comparison group or lacking support-level analysis
Outcome (O)	Teaching performance (observation rubrics; lesson/assessment quality; fidelity/pacing indices) and student mathematics outcomes (test scores, pass rates, growth).	Outcomes not plausibly linked to mathematics teaching or student mathematics achievement.
Type of publication	2020–2025; English or Filipino.	Pre-2020 publications; languages outside scope.

Table 1. Inclusion and Exclusion Criteria

Eligibility criteria were structured to include studies relevant to Philippine mathematics education, focusing on curriculum implementation, teaching performance, and student outcomes. Studies not meeting these criteria were excluded to maintain methodological rigor and ensure applicability to the MATATAG curriculum context.

Search Strategy

Searches covered peer-reviewed journals and reputable institutional sources: education indexes (e.g., ERIC), publisher sites and open-access portals for journals indexed in multidisciplinary databases, Philippine journals/portals, and official DepEd repositories (orders, memoranda, curriculum guides). Reference lists of included items were hand-searched. The core Boolean pattern (adapted per source; 2020–2025 limiter) was: ("MATATAG" OR "curriculum guide" OR "DepEd Order" OR "Mathematics Program" OR "pacing" OR "time allotment") AND (mathematics OR numeracy) AND (teacher* OR teaching OR instruction OR pedagogy) AND

("teaching performance" OR "classroom observation" OR assessment OR "student outcomes" OR achievement OR "test score*") AND (Philippine* OR Philippines). Results were exported (CSV/RIS where available) and deduplicated prior to screening; titles/abstracts were screened, followed by full-text eligibility checks and data extraction using a piloted codebook.

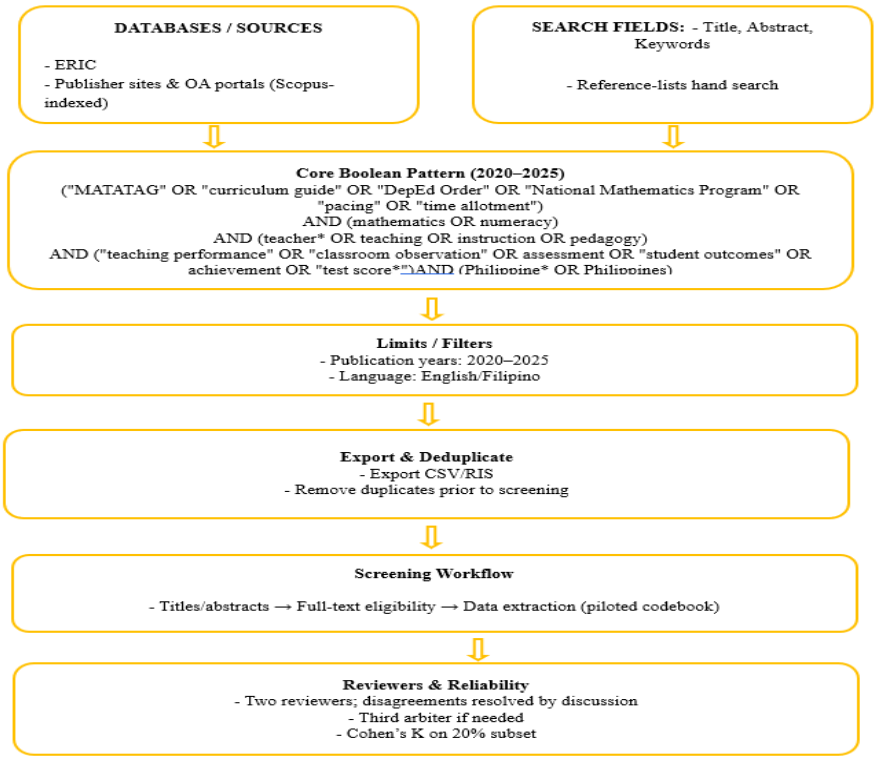

Figure 1. Search Strategy and Sources (2020–2025)

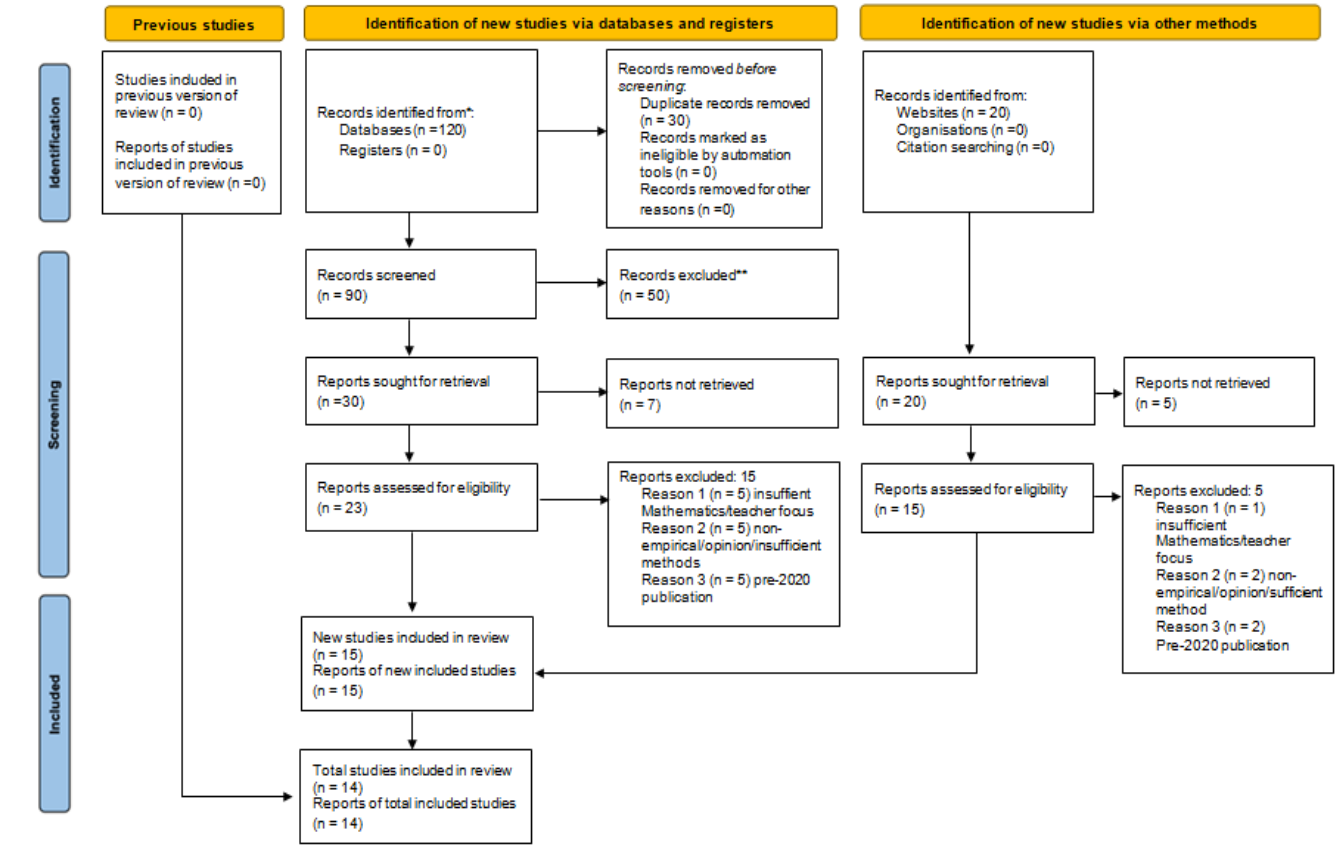

Figure 2. Data Selection Process

RESULTS AND DISCUSSION

This systematic literature review identified **14 eligible studies published between 2020 and 2025** after the application of the pre-specified inclusion criteria.

Authors/Year	Context (Urban/Rural)	Curriculum Focus	Teacher Constraints Identified	Effect on Teaching Performance	Student Outcomes	Key Insights
Maraveles & Ducot (2025)	Rural	MATATAG	Limited training, materials, unfamiliar competencies, lack of instructional materials	Difficulty aligning instruction, reliance on traditional methods	Lower Engagement and learning gaps	Rural teachers face highest constraints due to resource scarcity and insufficient PD
Ubias (2024)	Rural	MATATAG	Readiness gaps, workload	Delayed implementation, reduced lesson fidelity	Lower assessment performance	Teacher preparedness critical for effective curriculum delivery
Namibia Study (2024)	Rural	Revised Curriculum / NSSCO	Insufficient training	Poor curriculum fidelity	Student achievement challenges	Systemic training gaps reduce rural teaching quality
Rural Math Review (2025)	Rural	Math Implementation	Technology and support gaps	Adaptive but constrained teaching	Mixed outcomes	Resource scarcity limits innovation, student outcomes inconsistent
Teacher Perspectives (2025)	Urban vs Private	MATATAG	Curriculum Overload, administrative workload	Stress, limited instructional innovation	Not directly measured	Urban teachers affected more by workload than resources
Tibane et al. (2024)	Urban/Peri-Urban	Math curriculum/ General curriculum	Resources, socio-economic issues	Teacher frustration, limited instructional quality	Learning inequities	Class size and admin workload reduce teaching effectiveness

Calinog Nosce (2025)	Mixed	MATATAG	Unpreparedness, resource limits	Reduced teaching efficacy	Implicit negative effects	Time pressure affects both planning and student engagement
Herrera (2025)	Mixed	MATATAG	Resource & training gaps	Strain in implementation	Lower performance on assessment	Partial mitigation possible with targeted support
Po (2025)	Mixed	MATATAG	Administrative and instructional challenges	Reduced instructional quality	Lower Grade 7 performance	Leadership and workload constraints significantly affect outcomes
IJSSHR (2025)	Mixed	Math curriculum	Infrastructures, PD gaps	Varied instructional quality	Rural achievement gaps	Contextual disparities exacerbate inequities
Pham et al. (2025)	Mixed	Integrated math	Limited materials, technology issues	Improved with PD	Increased engagement	Professional development can enhance outcomes despite constraints
Systematic review (2025)	Mixed	Mathematics curricula	Training and alignment issues	Reduced teaching quality	Achievement limitations	Global evidence supports the link between teacher preparedness and student success
BERA Review (2025)	Mixed education	Mathematics curriculum	Curriculum-related stressors	Teacher quality affected	Achievement and affective outcomes	Teacher stress negatively mediates students learning and engagement
Comparative Curriculum Study (2025)	Revised math	Revised math curricula	Planning and assessment load	Teacher burnout risk	Slower learning gains	Workload management critical for sustaining performance

Rural Context

Teachers in rural contexts faced the most significant constraints. Limited access to professional development, insufficient instructional resources, and unfamiliarity with the revised competencies constrained teachers' ability to deliver curriculum-aligned instruction (Maraveles & Ducot, 2025; Ubias, 2024). Resource scarcity and technological limitations further hindered effective pedagogy (Namibia Study, 2024; Rural Math Review, 2025). These constraints manifested in reduced instructional alignment, reliance on conventional teaching methods, and adaptive but constrained pedagogical strategies. Consequently, students in rural settings demonstrated lower engagement, gaps in conceptual understanding, and delayed mastery of mathematics competencies (Maraveles & Ducot, 2025; Ubias, 2024; Namibia Study, 2024).

Urban and Peri-Urban Context

Urban teachers encountered distinct challenges related primarily to administrative workload, class size, and curriculum pacing pressures (Teacher Perspectives, 2025; Tibane et al., 2024). While access to resources and professional development was comparatively higher than in rural schools, these teachers exhibited reduced instructional innovation and reported stress-related limitations affecting classroom management. Although direct measures of student outcomes were less frequently reported, available evidence suggests that engagement and achievement were indirectly affected by these constraints (Teacher Perspectives, 2025; Tibane et al., 2024).

Mixed Contexts

In mixed urban-rural contexts, teachers commonly experienced overlapping constraints, including administrative demands, time pressures, and misalignment between instructional objectives and assessment strategies (Calinog Nosce, 2025; Herrera, 2025; Po, 2025; IJSSHR, 2025). These factors collectively reduced teaching efficacy, compromised lesson planning, and affected curriculum fidelity. Targeted professional development interventions demonstrated potential to mitigate negative effects, enhancing teaching performance and student engagement (Pham et al., 2025). Nonetheless, achievement disparities remained in under-resourced schools, highlighting persistent structural inequities.

MATATAG Curriculum Implementation

While the MATATAG Curriculum was designed to streamline competencies and decongest learning expectations, several studies highlighted that these reforms exposed systemic gaps in teacher preparedness. In rural contexts, Maraveles and Ducot (2025) reported that teachers struggled with unfamiliar competencies and limited instructional materials, constraining their ability to implement the curriculum as intended. Ubias (2024) similarly noted readiness gaps and workload pressures that further limited rural teachers' instructional capacity. In urban and peri-urban contexts, Tibane et al. (2024) and Teacher Perspectives (2025) observed that administrative workload and class size pressures compounded the challenges, demonstrating that teacher constraints were not solely resource-dependent but also linked to structural and organizational factors. Mixed-context studies (Calinog Nosce, 2025; Herrera, 2025; Po, 2025) further confirmed that insufficient training, limited access to professional development, and inadequate alignment between instruction and assessment were common barriers across school types.

Teaching Performance

The evidence indicates that teacher constraints directly affect teaching performance. In rural schools, limitations in resources and training led to difficulty in aligning instruction with curriculum standards, as noted by Maraveles and Ducot (2025) and the Namibia Study (2024). Teachers relied on traditional teaching methods or adapted strategies that were constrained by available resources, a pattern echoed in the Rural Math Review (2025). Urban teachers, although relatively better resourced, experienced stress and reduced instructional innovation due to workload, as reported by Tibane et al. (2024) and Teacher Perspectives (2025). In mixed-context studies, administrative and instructional challenges, such as planning and assessment load, were identified by Po (2025) and the Comparative Curriculum Study (2025) as factors that diminished teaching

efficacy and curriculum fidelity. Collectively, these findings underscore that both material and structural constraints significantly mediate teaching quality.

Student Academic Outcomes

The downstream effects of constrained teaching performance on student outcomes were particularly pronounced in rural areas. Maraveles and Ducot (2025) and Ubias (2024) documented lower student engagement and gaps in conceptual understanding, while Po (2025) reported delayed mastery of competencies in Grade 7 students. Urban students were less affected by resource scarcity, but stress and workload-related limitations among teachers were associated with reduced student engagement and achievement (Teacher Perspectives, 2025; Tibane et al., 2024). Mixed-context studies suggest that targeted professional development and contextualized support can mitigate negative outcomes, as shown by Pham et al. (2025), who found improvements in student engagement when teachers received structured PD interventions. Nonetheless, achievement disparities persisted in under-resourced schools, emphasizing the importance of context-specific interventions.

Implications for Policy and Practice

The findings underscore that curriculum reform alone is insufficient to enhance teaching quality or student outcomes. The effectiveness of the MATATAG Curriculum is contingent upon addressing teacher constraints directly through sustained professional development, provision of contextualized instructional resources, and tailored support for schools based on contextual needs. Rural schools require prioritized access to instructional materials and technology, whereas urban schools require strategies to manage administrative workload and class size pressures. Mixed-context interventions should focus on aligning professional development with curriculum objectives and addressing structural disparities to optimize both teaching performance and student achievement.

CONCLUSIONS

This systematic review of fourteen studies investigating the implementation of the MATATAG Curriculum in Philippine mathematics education underscores the intricate relationships between curriculum reforms, teacher constraints, teaching performance, and student academic outcomes. The findings demonstrate that, although the MATATAG Curriculum was designed to streamline competencies, reduce instructional congestion, and enhance curriculum coherence, its effectiveness is heavily dependent on addressing the contextual and structural challenges faced by teachers in diverse school environments.

In rural settings, teachers were most acutely affected by constraints. Limited access to professional development, insufficient instructional materials, and unfamiliarity with the revised competencies significantly hindered their ability to deliver curriculum-aligned lessons. Resource scarcity and technological limitations further restricted pedagogical options, compelling teachers to rely on conventional methods or improvised adaptations. These instructional challenges were directly associated with lower student engagement, gaps in conceptual understanding, and delayed mastery of mathematical competencies. These findings highlight the urgent need to provide rural teachers with both the material and instructional support necessary to improve teaching quality and reduce inequities in student learning outcomes.

Urban and peri-urban teachers encountered a different set of challenges, primarily linked to administrative workload, large class sizes, and the pace of curriculum delivery. Despite better access to resources and professional development than their rural counterparts, these structural pressures limited instructional innovation and adaptive teaching strategies. The evidence indicates that such constraints indirectly influenced student outcomes, particularly engagement and achievement, demonstrating that teaching quality depends not only on available resources but also on organizational and systemic factors within schools.

Mixed urban-rural contexts presented overlapping challenges, including resource limitations, time pressures, and misalignment between instructional objectives and assessment strategies. These factors collectively undermined teaching efficacy and curriculum fidelity. However, the studies also showed that targeted professional development and context-specific interventions could mitigate some negative effects, improving both teaching

performance and student engagement. Persistent achievement disparities in under-resourced schools, nonetheless, underscore the need for strategies that address both material and structural inequities.

Across all contexts, teacher constraints were found to mediate the link between curriculum design and student outcomes. Gaps in training, limited resources, excessive administrative responsibilities, and misalignment between instruction and assessment compromised teaching quality, ultimately affecting student engagement, understanding, and mastery. These findings clearly indicate that curriculum reform alone is insufficient to improve educational outcomes; comprehensive, context-sensitive support for teachers is essential.

From a policy and practice perspective, this review highlights the necessity of differentiated interventions. Rural schools should receive prioritized access to instructional materials, technology, and sustained professional development opportunities. Urban and peri-urban schools require strategies to manage administrative and class size pressures to maintain instructional effectiveness. Across mixed contexts, professional development should be carefully aligned with curriculum objectives, and systemic inequities must be addressed to ensure equitable learning opportunities for all students. Overall, the success of the MATATAG Curriculum depends on a holistic approach that integrates curriculum design with strategic, context-sensitive support for teachers, enabling them to deliver high-quality instruction and fostering improved student outcomes across diverse educational settings.

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