

Reframing Mathematics Learning in Philippine Public Schools: A Qualitative Analysis of Curriculum Reforms and Numeracy Policies

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Abstract. Mathematics education reforms shape what learners are expected to know and do, while also influencing how mathematics is taught and assessed in public schools. In the Philippines, recent reforms have responded to persistent learning gaps by placing greater emphasis on foundational competencies and numeracy. However, limited research has examined how these priorities are collectively reflected across curriculum, assessment, and learning recovery policies. This study addressed this gap through a qualitative analysis of publicly available Philippine education documents, examining how mathematics learning is framed across curriculum reforms and related policy initiatives. The documents reviewed included the K to 12 Mathematics Curriculum Guide, MATATAG Mathematics Curriculum Guide, assessment and learning recovery policies, the National Learning Camp, the National Learning Recovery Program, the Basic Education Development Plan 2030, and related mathematics education reports. The documents were analyzed thematically to identify recurring ideas, shifts in priorities, and connections among mathematical competencies, instructional expectations, and intended learner outcomes. The findings point to a shift from an emphasis on curriculum coverage and procedural skills toward foundational numeracy, conceptual understanding, mathematical reasoning, problem solving, and meaningful application. The documents also emphasize learner-centered, differentiated, inclusive, and assessment-informed instruction, together with teacher professional competence and targeted learner support. The study contributes an integrated policy-level view of these priorities by examining how they connect across multiple reforms rather than treating individual programs in isolation. The findings support continued efforts to strengthen curriculum coherence, teacher development, assessment, technology integration, and sustained learner support.

Keywords: assessment; foundational numeracy; learning recovery; mathematical reasoning; teacher professional development

Introduction

Mathematics education plays an important role in developing learners' ability to reason, solve problems, interpret information, and apply knowledge to everyday situations. Its value extends beyond computational proficiency. Mathematics also helps learners develop critical thinking, logical reasoning, and decision-making skills that are increasingly important in a complex, data-driven society. As education systems place greater emphasis on deeper learning and transferable competencies, mathematics curricula have gradually moved beyond procedural fluency toward conceptual understanding, problem solving, mathematical reasoning, and meaningful application of knowledge (National Council of Teachers of Mathematics [NCTM], 2014; OECD, 2023). In this sense, mathematics is not simply a subject to be mastered in school; it is also a means of helping learners make sense of and respond to the world around them.

In the Philippines, mathematics achievement remains a continuing educational concern. National and international assessment results have pointed to persistent difficulties in mathematical literacy, foundational skills, and the ability of learners to apply mathematical knowledge. These concerns have prompted education stakeholders to revisit how mathematics is taught and learned in basic education and have contributed to curriculum reforms, instructional innovations, and targeted interventions intended to strengthen numeracy and improve mathematics outcomes among Filipino learners (Department of Education [DepEd], 2023; World Bank, 2020). Yet improving mathematics learning requires more than looking at student performance alone. It also calls for an understanding of the curriculum frameworks, policy directions, and institutional priorities



that shape what learners are expected to know and do and, more broadly, what mathematics education is expected to accomplish within Philippine basic education.

Recent reforms, particularly the implementation of the MATATAG Curriculum, reflect the Department of Education's efforts to address learning gaps and strengthen foundational competencies. The revised curriculum places greater emphasis on essential learning competencies, mastery of foundational skills, contextualized learning, and higher-order thinking. In mathematics, these priorities point toward stronger conceptual understanding, mathematical reasoning, problem solving, and meaningful application of knowledge rather than an exclusive focus on memorization and procedural performance (DepEd, 2023). The direction of these reforms suggests a broader view of mathematics learning—one in which students are expected not only to carry out procedures but also to reason, communicate, make connections, and use mathematics in meaningful contexts.

Despite these developments, an important gap remains in understanding how the intended direction of mathematics education is constructed and communicated across Philippine curriculum and policy documents. Much of the existing research has focused on learner achievement, mathematical difficulties, teaching strategies, teacher competencies, and factors associated with mathematics performance. Curriculum-related research has likewise provided valuable insights into curriculum implementation, teachers' experiences, and the challenges associated with educational reforms. These studies help explain what happens at the learner and classroom levels, particularly in relation to mathematics achievement, instructional practices, and reform implementation (Orbeta et al., 2019; World Bank, 2020). Less attention, however, has been given to how different curriculum and policy documents work together to define the purposes of mathematics learning, identify the competencies that should be prioritized, communicate expectations for teaching, and respond to continuing challenges in mathematics education. There is particularly limited systematic analysis that brings together curriculum frameworks, policy issuances, numeracy initiatives, learning recovery programs, and assessment-related documents to examine the broader curricular and policy direction of mathematics education in Philippine public schools.

This gap matters because curriculum and policy documents do more than identify content or prescribe procedures. They reflect what an education system values, establish expectations for teachers and learners, and provide a foundation for instructional and assessment decisions. When examined together, these documents can reveal recurring priorities, emerging areas of emphasis, and possible tensions across different reform initiatives. Such an examination shifts the focus from asking whether a particular curriculum has been successfully implemented or whether an intervention has improved student achievement to a broader question: How is mathematics education itself being framed, prioritized, and reshaped through official educational documents?

Qualitative documentary analysis offers a useful way to explore this question because it allows researchers to examine publicly available documents as sources of institutional meaning and policy direction (Bowen, 2009; Morgan, 2022). By examining curriculum guides, DepEd issuances, numeracy program documents, learning recovery frameworks, and assessment-related reports, the study can identify recurring and emerging themes related to mathematical competencies, instructional approaches, learner expectations, and system-level priorities. More importantly, this approach makes it possible to look across individual reforms and initiatives and consider how they collectively contribute to the evolving direction of mathematics education in the Philippines.

The present study differs from previous curriculum and policy research in both its focus and scope. It does not seek to evaluate the effectiveness of a single curriculum reform, document teachers' experiences of implementation, or measure students' mathematics achievement. Instead, it examines how mathematics learning is represented across a range of publicly available Philippine curriculum and policy documents. By looking across these documents, the study seeks to identify common themes and shifts in emphasis and to understand how they collectively define the competencies, instructional approaches, and purposes of mathematics education. Bringing curriculum reforms into conversation with numeracy initiatives, learning recovery efforts, and assessment-related policies also allows the study to offer a broader policy- and curriculum-level perspective that complements research focused on classroom practice, teacher experiences, and learner outcomes.

Understanding how mathematics learning is framed in Philippine curriculum and policy documents can provide useful insights for future curriculum development, instructional planning, teacher preparation, and mathematics education policy. It can help clarify which competencies are being prioritized, what kinds of teaching and learning are being encouraged, and how current educational priorities respond to persistent challenges in mathematics learning. More broadly, examining these documents together can provide a clearer picture of where Philippine mathematics education is headed and what the education system expects mathematics learning to accomplish.



Research Questions

The general objective of this study was to examine mathematics education priorities in Philippine public schools through a qualitative documentary analysis of publicly available curriculum and policy documents. Specifically, it aimed to answer the following research questions:

1. What themes emerge from publicly available mathematics education documents regarding the goals and priorities of mathematics learning in Philippine public schools?
2. What competencies and teaching approaches are emphasized in mathematics curriculum and policy documents?
3. What implications for improving mathematics teaching and learning can be drawn from the analyzed documents?

Scope and Delimitation of the Study

This study focused on examining mathematics education priorities in Philippine public schools through a qualitative documentary analysis of selected publicly available Department of Education (DepEd) curriculum and policy documents related to mathematics instruction, numeracy development, learning recovery, and assessment. Specifically, the study examined key documents, including the DepEd K to 12 Mathematics Curriculum Guide (2016), the MATATAG Mathematics Curriculum Guide (2023), DepEd Order No. 31, s. 2020: Interim Guidelines for Assessment and Grading in Light of the Basic Education Learning Continuity Plan, DepEd Order No. 13, s. 2023: Policy Guidelines on the Implementation of the National Learning Camp, and other relevant DepEd issuances related to mathematics instruction, numeracy programs, and curriculum reforms. The study also considered publicly available documents related to the National Mathematics Program, Learning Recovery Program, and DepEd assessment reports, including national assessment results and reports highlighting mathematics learning performance and challenges. The analysis was limited to identifying emerging themes related to the goals and priorities of mathematics learning, the competencies expected of learners, the instructional approaches promoted in mathematics teaching, and the implications of these policy directions for strengthening mathematics education in public schools. As a qualitative documentary analysis, the study relied exclusively on publicly available DepEd documents and did not include data from mathematics teachers, school leaders, learners, curriculum developers, or other stakeholders involved in mathematics education implementation. Furthermore, the study did not evaluate the effectiveness or actual implementation of mathematics programs and curriculum reforms in schools; rather, it focused on examining how mathematics learning and teaching have been conceptualized, prioritized, and transformed through official DepEd curriculum and policy frameworks.

Literature Review

Mathematics Education Reforms and the Changing Nature of Mathematics Learning

Mathematics education has increasingly moved beyond a narrow emphasis on computational accuracy and procedural fluency toward a broader understanding of mathematical competence. Current perspectives emphasize conceptual understanding, problem solving, reasoning, mathematical communication, and the ability to apply mathematical knowledge in meaningful contexts. The National Council of Teachers of Mathematics (NCTM, 2014) identifies conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition as interconnected dimensions of mathematical proficiency. Similarly, the Programme for International Student Assessment (PISA) framework defines mathematical literacy in terms of learners' ability to formulate, employ, and interpret mathematics across different contexts (OECD, 2023). Although these frameworks serve different purposes, they point to the same fundamental shift: mathematical competence involves more than performing procedures correctly. Learners are expected to understand mathematical ideas, reason through problems, make connections, and apply mathematics beyond familiar classroom situations. This shift has influenced curriculum reforms in many education systems, including the Philippines. However, changing what a curriculum values does not necessarily mean that classroom practice or learner outcomes will change at the same pace. A curriculum may promote reasoning, problem solving, and conceptual understanding while classroom instruction remains focused largely on procedural practice and content coverage. This disconnect suggests that curriculum reform cannot be understood simply as a change in the content to be taught. It also involves changes in expectations for teachers, instructional practices, assessment, and learner outcomes. Understanding how these elements are connected is particularly important in education systems that continue to face persistent mathematics learning challenges.



Mathematics Education Challenges in the Philippine Context

The need for continued reform is evident in the Philippine mathematics education context. National and international assessments have consistently raised concerns about learners' mathematical literacy, foundational skills, reasoning, and ability to apply mathematical knowledge. PISA results, in particular, have highlighted substantial challenges in mathematics performance among Filipino learners (OECD, 2023). These findings have reinforced concerns about the extent to which learners are developing the foundational competencies needed to engage successfully with more complex mathematical ideas. The literature also suggests that these challenges cannot be attributed to learner characteristics alone. Orbeta et al. (2019) emphasized the role of broader systemic factors, including curriculum, teacher quality, and educational support mechanisms, in shaping learning outcomes. The World Bank (2020) similarly framed foundational learning difficulties as an education-system concern requiring coordinated responses rather than isolated interventions. Together, these perspectives shift attention from simply asking why students are struggling to considering how the educational system responds to those difficulties. Different strands of the literature, however, tend to approach the problem from different points. Assessment research emphasizes what learners know and can do; teacher-focused studies examine instructional knowledge and classroom practice; and policy research considers curriculum priorities, standards, and system-level responses. These perspectives are complementary, but they are not always brought together. As a result, less is known about how evidence of learning difficulties is translated into curriculum priorities, instructional expectations, and policy interventions across the Philippine mathematics education system.

Curriculum Reforms and Mathematics Learning Priorities

Curriculum reform provides one of the principal ways education systems respond to identified learning needs. The Philippine K to 12 Mathematics Curriculum Guide emphasizes mathematical understanding, problem solving, reasoning, and application across grade levels (Department of Education [DepEd], 2016). These priorities are consistent with the broader conception of mathematical proficiency reflected in NCTM (2014) and OECD (2023), suggesting continuity between Philippine curriculum expectations and international directions in mathematics education. The MATATAG Curriculum represents a more recent response to persistent learning gaps. Rather than simply adding or reorganizing content, the reform emphasizes essential learning competencies, foundational skills, mastery, reduced curriculum congestion, and improved learning progression (DepEd, 2023). In mathematics, these priorities reinforce the importance of numeracy, conceptual understanding, reasoning, and problem solving. There is therefore both continuity and change across the two curriculum frameworks. Problem solving and mathematical understanding remain important, but MATATAG places greater weight on prioritizing essential competencies and ensuring that foundational learning is mastered. This distinction matters because curriculum documents do more than identify what content should be covered. They reflect what an education system considers important for learners to know, understand, and be able to do. They also influence expectations for teaching, assessment, and intervention. A closer examination of curriculum documents can therefore reveal not only what has changed across reforms but also what priorities have remained consistent and how emerging educational concerns have reshaped the meaning of mathematics learning.

Mathematics Teaching Competencies and Instructional Practices

The shift toward conceptual understanding, reasoning, and problem solving also changes what is expected of mathematics teachers. Ball et al. (2008) emphasized that effective mathematics teaching requires specialized mathematical knowledge that allows teachers to represent mathematical ideas, interpret student thinking, anticipate difficulties, and make informed instructional decisions. NCTM (2014) similarly highlights practices such as establishing meaningful mathematical goals, facilitating productive struggle, promoting mathematical discourse, and connecting representations. These perspectives place teachers at the center of curriculum enactment. Yet they also reveal a potential gap between policy expectations and classroom realities. Teachers may be expected to promote reasoning, problem solving, differentiation, and contextualized learning while working within constraints related to learner readiness, instructional time, assessment demands, and available resources. Thus, curriculum reform may establish a desired direction, but teachers determine to a large extent how that direction is experienced in the classroom. Philippine policy documents reflect many of these expectations. The Philippine Professional Standards for Teachers (PPST) emphasizes teachers' content knowledge, responsiveness to learner diversity, pedagogical practices, assessment, and ability to create supportive learning environments (DepEd, 2017). These expectations align with both international mathematics education frameworks and the goals of the K to 12 and MATATAG curricula. The consistency across these documents is notable, but it also raises an important question: how are these expectations connected across the wider policy landscape, particularly when curriculum reforms are considered alongside numeracy initiatives, learning recovery programs, and assessment policies?



Numeracy Initiatives and Learning Recovery Efforts

The COVID-19 pandemic intensified existing concerns about foundational learning and placed learning recovery at the center of education policy. The World Bank (2022) emphasized the need to prioritize foundational literacy and numeracy, strengthen assessment systems, and provide targeted instructional support to address learning loss. These concerns are especially relevant to mathematics because weaknesses in foundational skills can affect learners' ability to understand more complex concepts as they progress through the curriculum. The Philippine response has included learning recovery initiatives such as the National Learning Camp and other programs intended to address identified learning gaps. These initiatives complement the direction of the MATATAG Curriculum by emphasizing foundational competencies, assessment, targeted support, and mastery. The relationship between the two is important: the curriculum establishes what learners are expected to know and be able to do, while learning recovery programs provide additional support for learners who have not yet reached those expectations. Assessment creates another link between curriculum and recovery efforts. Assessment evidence identifies areas of difficulty, curriculum frameworks establish expected competencies, and intervention programs provide targeted responses. Viewed together, these elements suggest an ongoing cycle in which curriculum priorities influence instruction, assessment identifies learning needs, and learning recovery efforts respond to those needs. Evidence from these efforts may then inform subsequent policy and curriculum decisions. Despite this connection, these areas are often discussed separately in the literature. Curriculum research tends to focus on learning standards and competencies, assessment research on learner performance, and learning recovery research on interventions and learning gaps. Examining these strands together may provide a more complete understanding of how the Philippine education system is responding to continuing challenges in mathematics learning.

Qualitative Documentary Analysis in Educational Research

The connections among curriculum reform, instructional expectations, assessment, and learning recovery make qualitative documentary analysis particularly appropriate for the present study. Bowen (2009) describes document analysis as a systematic process of reviewing and interpreting documents to identify meanings, patterns, and themes relevant to a research problem. Morgan (2022) similarly emphasizes careful document selection, organization, and interpretation as important elements of qualitative document analysis. Unlike studies that rely primarily on interviews, classroom observations, or learner achievement data, documentary analysis provides access to the formal expectations and priorities communicated by institutions. This makes it especially useful for examining educational policy because official documents reveal how institutions define problems, establish priorities, prescribe responses, and communicate expectations. More importantly, analyzing several documents together allows researchers to identify patterns and connections that may not be apparent when individual policies or reforms are considered separately. In mathematics education, these priorities are distributed across different types of documents. Curriculum guides establish competencies and learning expectations; teacher standards describe professional responsibilities; assessment documents provide evidence of learner performance; and numeracy and learning recovery programs outline responses to identified learning gaps. Examining these sources together provides an opportunity to understand not only what each document says but also how the documents collectively construct the intended direction of mathematics education.

Synthesis of the Literature and Research Gap

Across the literature, there is considerable agreement about the desired direction of mathematics education. International frameworks, Philippine curriculum documents, and teacher standards increasingly emphasize conceptual understanding, reasoning, problem solving, application, and foundational competencies (NCTM, 2014; OECD, 2023; DepEd, 2016, 2017, 2023). At the same time, research on mathematics achievement continues to point to substantial challenges in foundational skills and mathematical application among Filipino learners (OECD, 2023; World Bank, 2020). The literature also recognizes that curriculum goals cannot be separated from teachers' capacity to translate them into meaningful classroom experiences (Ball et al., 2008). There are, however, differences in emphasis. International frameworks tend to place strong attention on mathematical literacy, application, and real-world problem solving, while recent Philippine reforms give particular attention to foundational competencies, mastery, and learning recovery. Research on teacher competencies focuses on what teachers need to enact these expectations, whereas curriculum and policy documents describe what the education system expects teachers and learners to achieve. Learning recovery initiatives add another layer by addressing learners who have not yet reached expected competencies. Each perspective contributes something important, but they are rarely examined as parts of one connected policy and curricular landscape. This fragmentation points to the central research gap. Existing literature provides substantial information about mathematics achievement, teacher competencies, instructional practices, curriculum implementation, and learning recovery. What remains less clear is how these priorities



are collectively represented across multiple Philippine curriculum and policy documents and how they work together to define the intended direction of mathematics education. In particular, limited attention has been given to the connections among curriculum reforms, mathematics competencies, instructional expectations, assessment priorities, numeracy initiatives, and learning recovery efforts. The present study addresses this gap through qualitative documentary analysis of publicly available Philippine curriculum and policy documents. Rather than evaluating the effectiveness of a single curriculum, measuring student achievement, or examining teachers' experiences of implementation, the study examines how mathematics education is constructed and communicated across a body of related documents. By bringing curriculum frameworks together with policy issuances, numeracy initiatives, learning recovery programs, and assessment-related documents, the study seeks to identify recurring themes, shifts in emphasis, and connections among curriculum priorities, mathematics competencies, instructional practices, and desired learner outcomes. This perspective complements, rather than replaces, research focused on classroom practice, teacher experiences, and learner performance. By examining the policy and curricular foundations underlying those areas, the study seeks to provide a more integrated understanding of how Philippine mathematics education is being shaped in response to persistent learning challenges and ongoing curriculum reform.

Methodology

Research Design

This study used a qualitative documentary analysis design to examine how mathematics education priorities are represented in curriculum and policy documents in Philippine public schools. Documentary analysis is well suited to this purpose because it allows researchers to examine meanings, patterns, and contextual insights contained in existing written materials, particularly documents that reflect institutional priorities, educational reforms, and policy directions (Bowen, 2009; Morgan, 2022). Rather than evaluating the effectiveness of a particular program or measuring student achievement, the study focused on how mathematics learning, teaching expectations, and reform priorities are defined and communicated through official educational documents. The study employed thematic analysis to identify and interpret recurring ideas across the selected documents. The analysis followed the six-phase approach of Braun and Clarke (2021), while allowing the coding process to remain responsive to the content of the documents. A hybrid approach was used: initial codes were generated inductively from the documents, while the research questions and conceptual framework provided a deductive guide for organizing and interpreting the data. This combination allowed the analysis to capture ideas that emerged directly from the documents while keeping the interpretation focused on three areas: (1) the goals and priorities of mathematics learning, (2) the competencies and instructional approaches emphasized, and (3) the implications of these priorities for improving mathematics teaching and learning. Coding was conducted manually using Microsoft Word and Excel rather than qualitative data analysis software. A structured coding matrix was used to record relevant passages, initial codes, categories, emerging themes, and analytical notes. Codes were reviewed throughout the process, with similar ideas grouped together and overlapping codes merged when they represented the same underlying concept. This iterative process helped the researcher move from individual statements in the documents to broader themes that captured patterns across the dataset.

Data Sources

The study drew on publicly available Department of Education (DepEd) documents concerning mathematics education, curriculum reform, numeracy, learning recovery, assessment, and instructional improvement in Philippine public schools. The primary sources included the K to 12 Basic Education Curriculum Guide for Mathematics (2016), the MATATAG Mathematics Curriculum Guide (2023), DepEd Order No. 8, s. 2015, *Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program*, DepEd Order No. 31, s. 2020, *Interim Guidelines for Assessment and Grading in Light of the Basic Education Learning Continuity Plan*, and DepEd Order No. 13, s. 2023, *Policy Guidelines on the Implementation of the National Learning Camp*. The study also included publicly available documents related to the National Learning Recovery Program, National Mathematics Program, Basic Education Development Plan 2030, and relevant DepEd assessment reports addressing learner performance, mathematics achievement, and learning gaps. These sources were selected because they represent major directions in curriculum development, assessment, numeracy improvement, and learning recovery. Rather than examining each document independently, the study treated the selected sources as a connected body of policy evidence. This made it possible to compare priorities across reform periods and identify areas of continuity, changes in emphasis, and emerging directions in mathematics education.

Inclusion and Exclusion Criteria

Documents were selected using established criteria to ensure that the dataset remained relevant and credible. Documents were included when they were publicly accessible, officially issued or published by DepEd or an authorized government education body, and directly related to mathematics education, curriculum standards, learning competencies, instructional approaches, assessment, numeracy, learning recovery, or mathematics intervention. Documents also had to contain sufficient information relevant to at least one of the study's research questions. Documents were excluded if they were unrelated to mathematics education, originated from unofficial sources, contained insufficient information for thematic analysis, or addressed general education issues without a clear connection to mathematics teaching and learning. Unpublished school-level documents, teacher-created materials, and restricted-access documents were also excluded. These criteria helped keep the analysis focused on authoritative sources that could provide evidence of mathematics education priorities at the curriculum and policy level.

Data Generation

Data generation involved identifying, collecting, organizing, and reviewing publicly available documents related to mathematics education in Philippine public schools. Relevant sources were located through official DepEd publications, government education portals, and publicly accessible education reports. After collection, the documents were organized chronologically and grouped according to their primary purpose, such as curriculum development, instructional guidance, assessment, numeracy improvement, and learning recovery. Each document was first read in its entirety to understand its purpose, scope, intended audience, and policy context. The researcher then identified sections directly related to the research questions, including curriculum objectives, learning standards, competency descriptions, instructional recommendations, assessment guidelines, intervention goals, and statements concerning mathematics learning and learner outcomes. Relevant passages were entered into a Microsoft Excel coding matrix. The matrix included the document title and year, document type, relevant passage, initial code, category, emerging theme, and analytical notes. Maintaining this record helped preserve the connection between the original documents and the interpretations that emerged during analysis. The researcher also prepared brief summaries of each document, noting its primary purpose, relevance to mathematics education, and notable similarities or differences from other sources. Comparing the documents in this way was important because the study sought to understand the broader direction of mathematics education rather than simply describe the content of individual policies.

Researcher Reflexivity and Minimizing Interpretive Bias

Because documentary analysis requires interpretation, researcher reflexivity was considered throughout the study. The researcher maintained reflexive notes to record initial assumptions, emerging interpretations, questions, and decisions made during coding and theme development. This was particularly important because the researcher has a professional background in mathematics education and could therefore bring prior knowledge and expectations to the interpretation of policy documents. To minimize the influence of these perspectives, interpretations were consistently anchored in specific passages from the documents. The researcher maintained an audit trail connecting documentary evidence to initial codes, categories, and final themes. Documents from different policy areas and reform periods were also compared rather than relying on a single source to support an interpretation. When similar concepts appeared under different terms, the surrounding context was reviewed before deciding whether the codes should be combined. Likewise, concepts were kept separate when their policy intent or meaning was substantially different. The researcher also maintained a clear distinction between policy intent and implementation evidence. Statements describing what teachers or learners are expected to do were interpreted as policy expectations, not as evidence that such practices are consistently implemented in classrooms. This distinction helped prevent conclusions from extending beyond what the documents could reasonably support.

Trustworthiness

The trustworthiness of the study was addressed using the criteria of credibility, dependability, confirmability, and transferability proposed by Lincoln and Guba (1985). Credibility was strengthened by analyzing multiple official documents covering curriculum, assessment, teacher expectations, numeracy, and learning recovery. Comparing these sources allowed recurring patterns to be identified across different types of policy documents rather than relying on isolated statements. Dependability was supported by maintaining systematic records of document selection, coding decisions, category development, theme refinement, and analytical notes. The coding matrix and audit trail provided a clear record of how the findings developed from the original documents. Confirmability was supported by grounding interpretations in documentary evidence and maintaining reflexive notes throughout the analysis. The researcher also distinguished policy expectations

from evidence of actual implementation to avoid overstating the findings. Transferability was addressed through detailed descriptions of the Philippine educational context, document selection criteria, data sources, and analytical procedures. These details allow readers and future researchers to determine whether the findings may be relevant to other studies examining mathematics curriculum and policy reform.

Results and Discussions

Research Question 1: What themes emerge from publicly available mathematics education documents regarding the goals and priorities of mathematics learning in Philippine public schools?

Table 1. Emerging Themes on the Goals and Priorities of Mathematics Learning in Philippine Public Schools

Source Document	Documentary Evidence / Extracted Statement	Initial Code	Emerging Theme	Educational Implication
K to 12 Mathematics Curriculum Guide	Mathematics should be learned "comprehensively and with much depth."	Depth of mathematical learning	Strengthening foundational numeracy and mathematical understanding	Instruction should prioritize conceptual understanding and mastery rather than rapid coverage of content.
MATATAG Mathematics Curriculum Guide	Learners demonstrate "knowledge, skills, and understanding" across mathematical content domains.	Knowledge-skills- understanding integration	Strengthening foundational numeracy and mathematical understanding	Curriculum and instruction should balance conceptual understanding, procedural knowledge, and application.
K to 12 Mathematics Curriculum Guide	The twin goals of mathematics are "Critical Thinking and Problem Solving."	Critical thinking; problem solving	Developing problem-solving and mathematical reasoning abilities	Mathematics instruction should provide opportunities for reasoning, justification, and non-routine problem solving.
K to 12 Mathematics Curriculum Guide	Mathematics is applied through "critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life."	Application; communication; representation; reasoning	Developing problem-solving and mathematical reasoning abilities	Learners should use mathematics to interpret and solve meaningful situations rather than merely perform procedures.
MATATAG Mathematics Curriculum Guide	Learners apply mathematics through "critical thinking, problem solving, communicating, reasoning, and making connections."	Mathematical processes; reasoning	Developing problem-solving and mathematical reasoning abilities	Reasoning and communication should remain integral to mathematics learning and assessment.
DepEd Order No. 013, s. 2023 – National Learning Recovery Program	The program prioritizes addressing learning gaps, particularly among "the most vulnerable" and disadvantaged learners.	Learning gaps; learner vulnerability	Promoting equitable mathematics learning through intervention and support programs	Mathematics support should be differentiated according to identified learner needs.
DepEd Order No. 013, s. 2023 – National	The NMP seeks to improve numeracy and mathematics learning and increase the availability of	Data-informed intervention; numeracy monitoring	Promoting equitable mathematics learning through	Assessment data should be systematically used to identify learning

Mathematics Program	"broad and reliable data on numeracy and mathematics progress and achievement."	intervention and support programs	gaps and guide intervention.
DepEd Order No. 014, s. 2023 – National Learning Camp	The NLC provides "Enrichment, Consolidation and Intervention" based on learner needs.	Targeted support; remediation; enrichment	Promoting equitable mathematics learning through intervention and support programs
DepEd Order No. 014, s. 2023 – National Learning Camp	The NLC is described as a "voluntary learning recovery program."	Program participation; implementation conditions	Promoting equitable mathematics learning through intervention and support programs
			Learning recovery should provide differentiated opportunities rather than a uniform intervention for all learners.
			Effective implementation requires attention to teacher participation, workload, incentives, resources, and school capacity.

The first theme reflects a continuing policy emphasis on developing foundational mathematical knowledge and understanding. This emphasis is evident in both the K to 12 Mathematics Curriculum Guide and the MATATAG Mathematics Curriculum Guide, although the MATATAG reform places greater emphasis on prioritizing essential learning and creating space for deeper mastery.

The K to 12 Mathematics Curriculum Guide explicitly states that mathematics should be learned "*comprehensively and with much depth*" and identifies "*Critical Thinking and Problem Solving*" as the twin goals of mathematics education at the K–10 level. It further describes mathematics as involving critical thinking, problem solving, reasoning, communication, connections, representations, and decision-making in real-life contexts. These provisions show that the earlier curriculum was already intended to move mathematics instruction beyond isolated computational procedures. Understanding, reasoning, and application were part of its stated vision.

The MATATAG curriculum continues this direction while placing stronger emphasis on prioritization and depth. Its mathematics standards describe learners as demonstrating "*knowledge, skills, and understanding*" and applying these through processes such as "*critical thinking, problem solving, communicating, reasoning, and making connections between topic areas*." Viewed alongside the K to 12 framework, this suggests that MATATAG is less a complete departure from the previous curriculum than a recalibration of its priorities. The reform places greater weight on essential competencies, conceptual coherence, and mastery, particularly in response to persistent learning gaps.

This direction is consistent with contemporary mathematics education literature, which views mathematical proficiency as a combination of interconnected competencies, including conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition. NCTM (2018) likewise emphasizes learning environments in which students develop conceptual understanding and use mathematics to reason, solve problems, communicate, and make connections. OECD (2023) similarly defines mathematical literacy in terms of students' ability to reason mathematically and use mathematics to address problems in meaningful contexts.

At the same time, the documentary evidence points to an important implementation tension. Prioritizing or reducing competencies does not, by itself, guarantee deeper learning. A less congested curriculum may give teachers more room to explore mathematical ideas in depth, but that opportunity depends on whether they have adequate instructional time, appropriate resources, relevant assessment tools, and the professional knowledge needed to teach the prioritized competencies conceptually. In other words, curriculum decongestion addresses one condition for deeper learning, but it does not automatically produce it.

This distinction is important because there can be a gap between the intended curriculum described in policy documents and the enacted curriculum experienced by students in classrooms. The documents establish what learners are expected to understand, but they cannot ensure that classroom instruction consistently provides opportunities for reasoning, representation, discussion, and application. The findings therefore suggest that curriculum prioritization needs to be accompanied by sustained teacher support and attention to classroom implementation. Without these conditions, reducing curriculum content may simply change what teachers are expected to cover without substantially changing how mathematics is learned.

The second theme concerns the continuing emphasis on reasoning, problem solving, communication, representation, and application as central components of mathematics learning. The documentary evidence



shows that these expectations were already embedded in the K to 12 curriculum and have been retained and reinforced in the MATATAG framework.

The K to 12 Mathematics Curriculum Guide identifies "*Critical Thinking and Problem Solving*" as the twin goals of mathematics education. It also describes mathematics learning in terms of "*critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life.*" These provisions indicate that the curriculum was not designed primarily around memorization or procedural computation. Rather, it envisioned learners as users of mathematics who could reason, communicate mathematical ideas, make connections, and apply what they learned beyond routine exercises.

The MATATAG curriculum maintains these expectations. Its mathematics standards require learners to apply knowledge and skills through processes involving "*critical thinking, problem solving, communicating, reasoning, and making connections between topic areas.*" The continuity between the two frameworks is therefore notable. Reasoning and problem solving are not new additions introduced by MATATAG; instead, the reform appears to strengthen and prioritize competencies that were already part of the earlier curriculum.

This finding supports Boaler's (2022) view that mathematics learning should give students opportunities to explore ideas, explain their reasoning, consider multiple strategies, and understand mathematics as a process of making sense of ideas. It also reflects a broader conception of equitable mathematics instruction in which all learners are expected to engage in meaningful mathematical thinking rather than being limited to different levels of intellectual demand based on their perceived ability.

However, the presence of reasoning and problem-solving objectives in curriculum documents does not necessarily mean that these practices are consistently enacted in classrooms. The analysis points to a possible tension between ambitious curriculum expectations and the practical realities of teaching. Teachers may need to address unfinished learning, cover required competencies, prepare students for assessments, and manage large and academically diverse classes, often within limited instructional time. Under these conditions, teacher-directed explanations and procedural practice may appear more manageable, even when curriculum documents call for richer forms of mathematical engagement.

This matters because mathematical reasoning develops through sustained opportunities to explain, justify, represent, compare, and revise one's thinking. These practices require more than completing computational exercises and often require additional time for discussion, exploration, and feedback. Teachers therefore need practical support in translating broad curriculum expectations such as "*reasoning*" and "*problem solving*" into classroom tasks, questions, discussions, and assessment criteria.

The evidence consequently points to a strong policy foundation for mathematical reasoning, but policy language alone is not enough. The more important question is whether teachers have the time, resources, professional knowledge, and instructional support needed to make reasoning a regular part of mathematics learning. The challenge, then, is not simply to include reasoning and problem solving in the curriculum, but to create the conditions in which students can actually experience mathematics in these ways.

The third theme concerns the growing policy emphasis on addressing learning gaps through targeted intervention, remediation, enrichment, and numeracy improvement programs. This direction is particularly evident in the National Learning Recovery Program (NLRP), National Learning Camp (NLC), and National Mathematics Program (NMP).

DepEd's policy on the NLRP recognizes the need to address learning gaps, particularly among learners who are vulnerable or disadvantaged. The policy describes learning recovery as requiring appropriate curriculum, teaching and learning strategies, learner assessment, learning resources, and stakeholder support. It also identifies the National Learning Camp as a mechanism for providing "*Enrichment, Consolidation and Intervention.*" The National Mathematics Program similarly seeks to improve numeracy and mathematics learning by strengthening understanding of numeracy, increasing system capacity, and improving the availability of data on mathematics progress and achievement.

DepEd Order No. 014, s. 2023 further describes the National Learning Camp as a "*voluntary learning recovery program*" intended to complement previous learning efforts and provide learners with additional opportunities to improve their learning. Its use of Enhancement, Consolidation, and Intervention Camps based on learners' needs provides a clear indication that the policy response is moving toward more targeted forms of support rather than assuming that all learners require the same intervention.

Taken together, these policies suggest a shift from viewing mathematics achievement primarily as a classroom-level concern toward recognizing learning recovery as a shared, system-level responsibility. The identification of learning gaps, provision of targeted support, and use of learner data point to a more differentiated approach to mathematics education. This direction is consistent with international recommendations that learning recovery should respond to learners' specific needs through assessment, targeted instruction, and sustained monitoring (World Bank, UNESCO, & UNICEF, 2021; UNESCO, 2021).

The documentary evidence, however, also reveals several challenges that may affect implementation. First, effective intervention depends on accurate identification of learning gaps. The NMP's emphasis on improving data on numeracy and mathematics progress suggests that assessment capacity is an important condition for successful intervention. Teachers need to do more than administer assessments; they must be able to interpret the results and determine which concepts, skills, or misconceptions require attention.

Second, intervention programs require substantial time and organizational capacity. The NLC, for instance, involves teacher-learner engagement as well as collaborative professional learning activities. DepEd's implementation guidance provides incentives and service credits because participation may involve work beyond regular school days. These provisions highlight an important reality: learning recovery requires resources. It depends on teacher time, appropriate materials, funding, administrative coordination, and sustained school-level support.

Third, the continuing need for intervention programs raises a broader issue about the relationship between curriculum reform and learning recovery. On one hand, the MATATAG curriculum seeks to prioritize essential learning and strengthen foundational competencies. On the other, the continued implementation of national learning recovery initiatives indicates that many learners still enter classrooms with substantial unfinished learning. Intervention programs can provide an important response to these immediate needs, but they cannot substitute for strong everyday mathematics instruction.

For learning recovery to have a lasting effect, diagnostic assessment and responsive intervention need to become part of regular classroom practice. Otherwise, schools may address learning gaps through temporary or supplemental programs without sufficiently addressing the conditions that allow those gaps to persist. The findings therefore suggest that learning recovery should be viewed not simply as a collection of additional programs but as part of a broader effort to strengthen the quality and responsiveness of mathematics instruction.

Overall, the documentary evidence points toward a more comprehensive approach to mathematics reform. Curriculum frameworks establish expectations for foundational knowledge, reasoning, and application; learning recovery policies respond to identified gaps; and intervention programs provide additional support for learners who need it. Yet the effectiveness of these reforms depends on how well these components work together. Without sufficient teacher capacity, assessment expertise, instructional resources, and organizational support, policy initiatives may provide short-term assistance without producing sustained improvements in mathematics learning.

The central issue, therefore, is not whether the reforms have identified the right priorities. The documents show considerable consistency in emphasizing foundational learning, mathematical reasoning, and targeted support. The more difficult question is whether schools and teachers have the conditions necessary to turn these priorities into everyday classroom practice. Sustained improvement will require coherence among curriculum expectations, instruction, assessment, intervention, teacher professional learning, and resource allocation. This is where the long-term success of mathematics reform is likely to be determined.

Research Question 2: What competencies and qualities of future teachers are emphasized across different policy periods?

Table 2. Emerging Themes on Mathematics Competencies and Teaching Approaches

Source Document	Documentary Evidence / Extracted Statement	Initial Code	Emerging Theme	Educational Implication
K to 12 Mathematics Curriculum Guide (DepEd, 2016)	Mathematics learning involves "critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life."	Conceptual learning; reasoning; application	Strengthening conceptual understanding and mathematical reasoning	Mathematics instruction should move beyond procedural practice toward reasoning, communication, connections, and application.
K to 12 Mathematics Curriculum Guide (DepEd, 2016)	"Critical Thinking and Problem Solving" are identified as the twin goals of mathematics education.	Critical thinking; problem solving	Strengthening conceptual understanding and mathematical reasoning	Classroom experiences should require learners to reason, explain, and solve meaningful mathematical problems.

MATATAG Mathematics Curriculum Guide	Learners demonstrate "knowledge, skills, and understanding."	Knowledge-skills- understanding integration	Strengthening conceptual understanding and mathematical reasoning	Instruction should integrate conceptual understanding, procedural knowledge, and application.
MATATAG Mathematics Curriculum Guide	Learners apply mathematics through "critical thinking, problem solving, communicating, reasoning, and making connections."	Mathematical processes; reasoning; communication	Strengthening conceptual understanding and mathematical reasoning	Teachers should provide opportunities for mathematical discourse, justification, representation, and application.
MATATAG Mathematics Curriculum Guide	Emphasis is placed on essential learning and foundational competencies.	Curriculum prioritization; foundational learning	Strengthening conceptual understanding and mathematical reasoning	Curriculum prioritization should create opportunities for greater depth and mastery of essential mathematics.
National Learning Camp / DepEd Order No. 014, s. 2023	The NLC provides "Enhancement, Consolidation and Intervention" opportunities.	Differentiated support; intervention; enrichment	Promoting learner-centered and differentiated mathematics instruction	Learners should receive support appropriate to their identified levels of understanding and learning needs.
National Learning Camp / DepEd Order No. 014, s. 2023	The NLC is a "voluntary learning recovery program" intended to address learning gaps.	Learning recovery; targeted support	Promoting learner-centered and differentiated mathematics instruction	Recovery initiatives should complement regular classroom instruction and respond to identified learning needs.
National Learning Recovery Program	Learning recovery policies emphasize addressing learning gaps through targeted support.	Learner needs; learning gaps	Promoting learner-centered and differentiated mathematics instruction	Schools need systems for identifying learner needs and providing appropriate instructional support.
DepEd Order No. 8, s. 2015	Classroom assessment is "an integral part of curriculum implementation."	Assessment integration; instructional decision-making	Integrating assessment to support learning	Assessment should be embedded within instruction and used to guide teaching decisions.
DepEd Order No. 8, s. 2015	Assessment supports monitoring of learner progress and instructional decisions.	Formative assessment; monitoring	Integrating assessment to support learning	Teachers should use evidence of learning to adjust instruction and provide timely support.
National Mathematics Program	The program emphasizes improving numeracy and strengthening information on mathematics progress and achievement.	Data-informed instruction; numeracy monitoring	Integrating assessment to support learning	Reliable assessment information should guide intervention, monitoring, and instructional planning.
K to 12 and MATATAG curriculum policies	Curriculum expectations require teachers to facilitate reasoning, problem solving, communication, and application.	Teacher pedagogical capacity	Enhancing teachers' professional competence in mathematics instruction	Teachers require mathematical and pedagogical knowledge to translate curriculum expectations into classroom practice.
Learning recovery and assessment policies	Teachers are expected to identify learning gaps and provide appropriate instructional support.	Assessment literacy; instructional responsiveness	Enhancing teachers' professional competence in	Professional learning should strengthen teachers' capacity to interpret evidence and

			mathematics instruction	design responsive interventions.
Curriculum reform and professional development policies	Reform implementation requires teachers to adapt instructional practices to revised curriculum expectations.	Professional learning; instructional adaptation	Enhancing teachers' professional competence in mathematics instruction	Sustained professional development, coaching, collaboration, and mentoring should accompany curriculum reform.

The first theme reflects a consistent policy emphasis on developing mathematics learning beyond the acquisition of computational procedures. Across the curriculum documents, mathematics is presented as a discipline that requires learners to understand concepts, reason about relationships, solve problems, communicate mathematical ideas, make connections, and apply mathematics in meaningful situations.

The K to 12 Mathematics Curriculum Guide provides direct evidence of this orientation. It describes mathematics learning through “critical thinking, problem solving, reasoning, communicating, making connections, representations, and decisions in real life” (DepEd, 2016) and identifies “Critical Thinking and Problem Solving” as the twin goals of mathematics education. These provisions show that mathematical competence was already understood under the K to 12 framework as something broader than procedural fluency. Learners were expected not only to obtain correct answers but also to reason, communicate, make connections, and use mathematics in real-life situations.

The MATATAG Mathematics Curriculum continues this direction while placing greater emphasis on prioritizing essential learning and strengthening foundational competencies. Its focus on learners’ “knowledge, skills, and understanding,” together with processes such as critical thinking, problem solving, communication, reasoning, and making connections, shows considerable continuity between the two frameworks. MATATAG can therefore be viewed less as a complete philosophical departure from K to 12 mathematics and more as a reorganization of priorities intended to create greater depth and mastery in response to persistent learning gaps and concerns about curriculum congestion.

This continuity is important. The issue is not whether conceptual understanding and mathematical reasoning are recognized in policy; they clearly are. The more difficult question is whether curriculum structures and classroom conditions give teachers and learners enough opportunity to develop them. NCTM (2018) describes meaningful mathematics learning as involving interconnected forms of proficiency, including conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and productive disposition. Similarly, OECD (2023) emphasizes the ability to reason mathematically and apply mathematics to authentic situations as important dimensions of mathematical literacy.

The documentary evidence, however, also points to a tension between breadth and depth. The K to 12 curriculum established broad content and process expectations, while MATATAG seeks to prioritize essential competencies. Reducing or prioritizing content may create more room for deeper learning, but curriculum decongestion by itself cannot guarantee it. Teachers still need sufficient instructional time, appropriate learning resources, meaningful mathematical tasks, and assessment practices that value reasoning and explanation rather than primarily rewarding correct answers.

This suggests that the reform should not simply be interpreted as a movement from a “traditional” curriculum toward a “conceptual” one. The evidence points instead to an effort to strengthen an orientation that was already present in K to 12 but was difficult to fully realize under conditions of curriculum breadth and persistent learning gaps. The key implementation challenge is making the intended emphasis visible in everyday classroom practice through mathematical discussion, problem solving, representations, justification, and application. In this sense, curriculum prioritization is an important starting point, but it is not sufficient on its own.

The second theme concerns the growing expectation that mathematics instruction should respond to differences in learners’ prior knowledge, readiness, learning needs, and pace rather than rely on a uniform instructional approach. Across the analyzed documents, learner participation, contextualization, appropriate support, and responsiveness to learner needs appear as important considerations in mathematics instruction.

This direction is consistent with contemporary views of mathematics learning that position students as active participants in making sense of mathematical ideas. Rather than simply receiving explanations and reproducing procedures, learners need opportunities to explain their reasoning, compare strategies, represent mathematical ideas, engage in mathematical discussion, and solve meaningful problems (Boaler, 2022). Such approaches allow students to participate more fully in mathematical thinking rather than limiting learning to the completion of routine exercises.

The learning recovery policies provide particularly visible evidence of this emphasis on differentiated support. The National Learning Camp (NLC), for example, provides “Enhancement, Consolidation and



Intervention" opportunities based on learners' needs. This structure recognizes that students do not necessarily require the same type or level of mathematics support. Some may benefit from enrichment, while others may need additional opportunities to consolidate concepts or receive more intensive intervention.

This policy direction is significant because differentiation is framed not simply as a preferred teaching technique but as part of a broader response to differences in learner achievement. The National Learning Recovery Program similarly reflects a policy commitment to addressing learning gaps through targeted support rather than treating low achievement solely as an individual learner problem.

At the same time, the move toward learner-centered and differentiated instruction creates substantial demands for teachers. Effective differentiation requires teachers to identify specific learning needs, adjust tasks and representations, provide appropriate scaffolds, monitor progress, and maintain meaningful mathematical expectations across different levels of readiness. These demands become particularly challenging in classrooms with large numbers of students, significant differences in achievement, limited instructional time, or insufficient resources.

The documentary evidence therefore highlights an important distinction between differentiation as a policy expectation and differentiation as an enacted classroom practice. A policy can call for learner-centered and responsive instruction, but teachers need practical models, usable instructional materials, reliable information about student learning, and professional support to make those expectations workable in real classrooms.

The sustainability of learning recovery programs also deserves attention. Programs such as the NLC can provide valuable opportunities for intervention and enrichment, but short-term programs cannot, by themselves, resolve learning gaps that have developed over several years. Their longer-term value depends partly on what happens after the program ends. If information about students' needs and progress is carried back into regular mathematics instruction, intervention can contribute to sustained improvement. If it remains confined to the program itself, its effects may be more limited.

The findings therefore suggest that differentiated support needs to extend beyond special programs. It should become part of everyday mathematics instruction, supported by assessment information and responsive teaching practices. This would allow learning recovery to function not only as a temporary response to existing gaps but also as part of a broader approach to preventing those gaps from becoming more persistent.

The third theme highlights the growing role of assessment as an integral part of mathematics teaching and learning. The analyzed policies indicate a movement away from viewing assessment primarily as a mechanism for grading or reporting toward understanding it as a source of evidence that can guide instructional decisions.

DepEd Order No. 8, s. 2015 provides direct documentary evidence of this orientation by stating that classroom assessment is "*an integral part of curriculum implementation.*" The policy positions assessment as a means of monitoring learner progress and informing decisions about teaching and learning. This provides a clear policy basis for understanding assessment as more than an end-point measure of achievement.

The importance of this orientation becomes clearer when assessment is considered alongside learning recovery initiatives. Assessment can identify competencies that learners have not yet mastered, while differentiated instruction and intervention can provide opportunities to address those needs. The relationship can therefore be understood as an ongoing instructional cycle: assessment identifies learning needs, instruction responds to those needs, intervention provides additional support when necessary, and subsequent assessment provides evidence of progress.

This reflects the central principle of assessment for learning. Evidence of student understanding is most useful when it leads to decisions that improve subsequent learning. William (2018) similarly argues that assessment has its greatest instructional value when teachers use evidence of learning to adjust teaching and provide appropriate feedback.

The National Learning Recovery Program and National Learning Camp further demonstrate this connection by linking identified learning gaps with targeted support. The National Mathematics Program also reinforces the importance of information about numeracy and mathematics progress and achievement. Taken together, these initiatives suggest that improving mathematics achievement increasingly depends on schools' ability to determine what learners know, identify what remains to be learned, and respond accordingly.

There is, however, an important limitation between having assessment information and being able to use it effectively. Teachers need sufficient assessment literacy to interpret results, identify mathematical misconceptions, distinguish procedural errors from conceptual difficulties, and determine appropriate instructional responses. A score can show that a learner has not met a standard, but it does not necessarily explain why.

Assessment-informed instruction also requires time and flexibility. When teachers face multiple assessment requirements, large classes, or competing administrative responsibilities, assessment can easily become a reporting exercise rather than a tool for improving instruction. Simply collecting more data does not



necessarily lead to better teaching. What matters is whether teachers have the time, knowledge, and support to make meaningful use of the evidence.

The findings therefore suggest that assessment should serve as a bridge between curriculum expectations and classroom instruction. Its value lies not in the amount of data generated but in what teachers are able to do with that information. When assessment evidence leads to changes in instruction, targeted support, or opportunities for students to revisit difficult concepts, it becomes part of the learning process rather than something that occurs after learning has already taken place.

The fourth theme centers on teachers' capacity to translate curriculum, instructional, and assessment expectations into actual classroom practice. Although policy documents establish what learners are expected to know and demonstrate, teachers ultimately determine how those expectations are experienced by students.

Both the K to 12 and MATATAG curriculum frameworks call for learning that involves conceptual understanding, reasoning, problem solving, communication, connections, and application. Meeting these expectations requires more than strong knowledge of mathematical content. Teachers also need to understand how students develop mathematical ideas, anticipate common misconceptions, select tasks that promote reasoning, facilitate mathematical discussion, differentiate instruction, and use assessment evidence to adjust teaching.

This makes teacher capacity particularly important because the reforms broaden the instructional role of mathematics teachers. Teachers are expected to explain mathematical ideas, design meaningful learning experiences, facilitate discussion, assess understanding, respond to differences among learners, and provide additional support when gaps are identified. These responsibilities are closely connected. A teacher cannot easily implement conceptual instruction without understanding how students' mathematical thinking develops, just as effective differentiation and assessment require teachers to interpret what students understand and why they may be struggling.

This emphasis on teacher capacity is consistent with research identifying teacher knowledge and pedagogical competence as important influences on effective mathematics instruction (König et al., 2021). Professional competence includes mathematical knowledge as well as pedagogical knowledge, knowledge of learners, assessment knowledge, and the ability to make sound instructional decisions based on classroom evidence.

The documentary evidence therefore suggests that professional development should be viewed as a necessary condition for reform implementation, not as an additional activity that can be addressed separately. If teachers are expected to implement a more conceptually focused curriculum, differentiate instruction, interpret assessment information, and participate in learning recovery initiatives, they need sustained opportunities to develop the knowledge and skills associated with these practices.

At the same time, professional development has its own implementation challenges. One-time workshops may introduce teachers to new curriculum frameworks or instructional strategies, but they are unlikely to be sufficient on their own to produce sustained changes in practice. Teachers may need ongoing professional learning, collaborative planning, coaching, opportunities to examine student work, and access to high-quality instructional resources. More importantly, professional learning is likely to have limited impact when teachers lack the time or conditions needed to apply what they have learned.

This points to a broader issue of teacher capacity versus teacher expectations. Asking teachers to differentiate instruction, analyze assessment data, implement revised curriculum standards, and participate in learning recovery programs can create considerable demands. If these expectations are not accompanied by adequate planning time, resources, collaboration, and administrative support, professional development alone cannot resolve the resulting implementation challenges.

The fourth theme therefore provides an important lens for understanding the other three. Conceptual mathematics learning depends on teachers who can facilitate reasoning and make mathematical ideas accessible. Differentiated instruction depends on teachers who can identify learner needs and adjust instruction accordingly. Assessment-informed teaching depends on teachers who can interpret evidence and turn it into appropriate instructional action. Teacher professional competence is consequently not a separate element of mathematics reform; it is a condition that cuts across the entire reform agenda.

Taken together, the four themes show a clear direction in Philippine mathematics education policy: greater attention to conceptual understanding, responsiveness to learner differences, meaningful use of assessment, and stronger teacher capacity. The documentary evidence provides substantial support for these priorities. At the same time, it also shows that policy intent and classroom enactment are not the same. The success of these reforms will depend on whether schools can provide teachers with the time, resources, professional learning, and institutional support needed to turn broad curriculum expectations into consistent classroom practice.

Research Question 3: What implications for improving mathematics teaching and learning can be drawn from the analyzed documents?

Table 3. Implications for Strengthening Mathematics Teaching and Learning in Philippine Public Schools

Emerging Theme	Description	Core Implication	Documentary Evidence
Strengthening foundational numeracy through coherent curriculum implementation	Mathematics reforms prioritize mastery of essential competencies before introducing advanced mathematical concepts.	Ensure essential mathematical concepts are sequenced coherently and taught with sufficient depth and mastery.	MATATAG Mathematics Curriculum Guide (2023); K to 12 Mathematics Curriculum Guide (2016)
Promoting learner-centered and inclusive mathematics instruction	Policies encourage differentiated instruction, learner engagement, and equitable learning opportunities for diverse learners.	Provide teachers with the strategies and support needed to respond to differences in learner readiness, needs, and learning pathways.	DepEd Order No. 42, s. 2016; National Learning Camp; National Learning Recovery Program
Using assessment and intervention to improve mathematics achievement	Assessment information guides instruction, identifies learning gaps, and informs intervention programs.	Establish a continuous cycle of assessment, targeted intervention, and progress monitoring to address learning gaps.	DepEd Order No. 8, s. 2015; DepEd assessment reports; National Learning Recovery Program
Investing in teachers' professional learning and instructional capacity	Teacher competence and continuous professional development are viewed as essential for successful mathematics reform.	Provide sustained, collaborative, classroom-connected professional learning and the working conditions needed to implement reforms effectively.	BEDP 2030; National Mathematics Program; MATATAG Curriculum Implementation Framework

The first implication concerns the need to strengthen foundational numeracy through coherent curriculum implementation. The emphasis of the MATATAG Mathematics Curriculum on essential competencies underscores the importance of ensuring that learners develop a strong understanding of fundamental mathematical concepts before moving to more complex ideas. Mathematical knowledge is cumulative. Learners need opportunities to connect new concepts with what they already know and gradually apply that knowledge in increasingly complex situations.

A coherent curriculum can support this progression by establishing clear connections among competencies across grade levels and reducing fragmented learning experiences. Research indicates that curriculum coherence and appropriate sequencing contribute to student achievement by promoting continuity and deeper understanding (Schmidt et al., 2018). For this reason, curriculum implementation should not be measured simply by the number of competencies reduced or retained. More importantly, the essential competencies need to be taught with sufficient depth, appropriate sequencing, and meaningful connections to other mathematical ideas.

This also places important demands on schools. Teachers need adequate instructional time, appropriate learning materials, and pedagogical support to move beyond content coverage and give students time to develop conceptual understanding, reasoning, and problem-solving skills. Curriculum prioritization will have greater value when it creates actual opportunities for mastery rather than simply reducing what teachers are expected to teach. The implication, then, is not only to streamline the curriculum but to create the conditions in which learners can build a strong and connected foundation in mathematics.

The second implication relates to strengthening learner-centered and inclusive mathematics instruction. The findings show that recent mathematics reforms increasingly recognize differences in learners' prior knowledge, readiness, pace, and educational needs. Mathematics instruction therefore needs to provide meaningful opportunities for participation while maintaining appropriate expectations for all learners. Curriculum documents can establish this direction, but teachers need practical knowledge and strategies to make it work in the classroom. Learner-centered mathematics instruction should give students opportunities to explain their thinking, explore different strategies, discuss mathematical ideas, work with peers, and apply mathematics to meaningful situations. At the same time, teachers need to provide scaffolds and targeted support for learners who have difficulty developing foundational concepts.

Inclusion also cannot depend on a single instructional approach. Teachers may need to adjust tasks, questions, representations, grouping, pacing, and levels of support depending on what learners demonstrate. This becomes especially important in classrooms where students differ substantially in mathematical readiness



and achievement. Promoting learner-centered and inclusive instruction, therefore, requires more than encouraging teachers to differentiate their teaching. Schools also need to provide time and structures for teachers to plan together, examine learner needs, share strategies, and develop appropriate responses to learner diversity.

The third implication concerns the integration of assessment and intervention to improve mathematics achievement. The findings suggest that assessment should serve a purpose beyond documenting performance or assigning grades. It should provide useful information about what learners understand, where difficulties remain, and what teachers can do next.

Diagnostic and formative assessments can help teachers identify prior knowledge, misconceptions, and unfinished learning. That information can then guide instructional decisions, including whether students need additional practice, consolidation, enrichment, or more intensive intervention. Wiliam (2018) emphasizes that assessment is most useful when it is integrated into instruction and used to guide both teacher decisions and learner reflection.

The National Learning Recovery Program and National Learning Camp demonstrate DepEd's commitment to addressing learning disparities through targeted support. However, the effectiveness of these initiatives depends on more than their availability. Consistent implementation, adequate resources, appropriate interventions, and continued monitoring of learner progress are necessary if learning recovery efforts are to produce lasting results. International evidence likewise suggests that effective learning recovery requires systematic identification of learning needs, evidence-based intervention, and sustained support rather than short-term responses to learning difficulties (UNESCO, 2021).

Assessment and intervention should therefore be treated as parts of the same process rather than as separate activities. Assessment identifies the learning need; instruction or intervention responds to it; and subsequent assessment provides evidence of whether the response worked. This cycle allows schools to move beyond simply identifying achievement gaps and toward addressing them systematically. It also makes intervention more responsive because decisions are based on evidence of what learners actually need.

The fourth implication concerns the need to invest in teachers' professional learning and instructional capacity. The findings across the four themes point to a common condition: curriculum reform ultimately depends on teachers' ability to translate policy expectations into classroom practice. Strong curriculum standards, differentiated instruction, meaningful assessment, and targeted intervention are difficult to sustain when teachers do not have the necessary knowledge, skills, time, and support.

Teachers therefore need more than familiarity with revised curriculum requirements. They need strong mathematical content knowledge, pedagogical knowledge, assessment literacy, and the ability to respond to differences among learners. Professional learning should help teachers deepen their own understanding of mathematics while also developing practical ways to facilitate reasoning, design meaningful tasks, differentiate instruction, interpret assessment evidence, and provide targeted support.

Darling-Hammond et al. (2017) emphasize that effective professional development is sustained, collaborative, active, and connected to teachers' actual classroom contexts rather than limited to short-term training. Professional learning should consequently give teachers opportunities to apply new practices, examine student work, collaborate with colleagues, receive feedback, and reflect on the effectiveness of their instruction. This kind of ongoing support is more likely to influence classroom practice than isolated workshops that introduce new policies or strategies without follow-up.

At the same time, teacher professional learning cannot be separated from teachers' working conditions. Even well-prepared teachers may struggle to implement learner-centered, differentiated, and assessment-informed instruction when instructional time is limited, resources are inadequate, or multiple reform initiatives compete for their attention. Investing in teachers should therefore extend beyond training. It should include opportunities for collaboration, mentoring and coaching, access to quality instructional resources, and protected time for planning and reflection.

Taken together, the four implications point to a common need for greater coherence in mathematics reform. Strengthening foundational numeracy requires a curriculum that gives essential ideas sufficient depth and progression. Learner-centered instruction requires teachers and schools to respond meaningfully to differences among learners. Assessment and intervention need to operate as an ongoing cycle that informs instruction and addresses identified gaps. All of these, in turn, depend on teachers having the professional capacity and working conditions necessary to implement them.

The broader implication is that mathematics improvement cannot rest on curriculum revision alone. Sustainable improvement requires alignment among curriculum, instruction, assessment, intervention, professional learning, and school-level support. When these elements reinforce one another, mathematics reforms are more likely to move beyond policy expectations and become visible in students' everyday learning experiences.



Ethical Considerations

Although the study did not involve human participants, ethical considerations remained important because the analysis involved interpreting official educational documents. All documents were obtained from legitimate public sources and appropriately cited. Care was taken to represent the content and intent of each document accurately and to avoid presenting statements outside their original policy context. The study also maintained a clear distinction between documented policy intentions and claims about actual implementation. Because the analysis focused on curriculum and policy documents rather than classroom observations or learner outcomes, the study did not make claims about the effectiveness of specific reforms or intervention programs unless such claims were directly supported by the documents. Proper citation and transparent reporting were maintained throughout the study to acknowledge the sources and uphold scholarly integrity.

Conclusions

Based on the findings of the study, three conclusions were drawn regarding the direction, instructional priorities, implementation requirements, and broader policy implications of mathematics education reforms in Philippine public schools. Mathematics education reforms increasingly emphasize foundational numeracy and conceptual understanding, mathematical reasoning and problem solving, and learner-responsive and equitable approaches to addressing persistent learning gaps, reflecting a broader shift toward mathematics education that values meaningful understanding and application rather than content coverage alone. The mathematics education documents examined emphasize competencies and instructional approaches that include mathematical reasoning, problem solving, communication, contextualized learning, learner-centered and differentiated instruction, inclusive practices, and the meaningful use of assessment to support learning, while also showing that the effective enactment of these priorities depends on teacher capacity, resources, and coherent policy implementation. As a contribution to curriculum policy research and documentary analysis, the study demonstrates how systematic examination of curriculum and policy documents can reveal connections, continuities, tensions, and implementation conditions across reforms, providing a framework that may be useful for examining mathematics education policy in other contexts and informing broader efforts to design coherent, equitable, and sustainable mathematics education reforms.

Recommendations

Based on the findings and conclusions of the study, several recommendations are proposed to strengthen the quality, coherence, and sustainability of mathematics education. The Department of Education and policymakers should consider strengthening the alignment among curriculum standards, essential learning competencies, assessment practices, and emerging priorities in mathematics education, while providing sustained professional development that enhances teachers' mathematical content knowledge, pedagogical competence, assessment literacy, learner-responsive instruction, and capacity to implement evidence-based practices. Future curriculum reforms should give appropriate attention to mathematical literacy, data literacy, digital technologies, artificial intelligence, and real-world problem solving while maintaining realistic curriculum demands, sufficient instructional time, and adequate teacher support. At the school level, school leaders should establish systematic mechanisms for using assessment evidence to identify learning gaps, design targeted interventions, monitor learner progress, and support collaborative planning and professional learning, while ensuring that mathematics intervention programs are adequately resourced, systematically implemented, regularly evaluated, and integrated with regular classroom instruction to promote sustained learning recovery. Mathematics teachers should continue to strengthen learner-centered, differentiated, and inclusive instructional practices that foster conceptual understanding, mathematical reasoning, problem solving, mathematical communication, and active learner participation, using formative and summative assessment evidence to adapt instruction to diverse learner needs. Finally, future researchers should investigate how curriculum reforms are implemented in actual mathematics classrooms, examine teachers' experiences and implementation challenges, evaluate the effectiveness and sustainability of mathematics intervention programs, and explore evidence-based approaches for integrating digital technologies, artificial intelligence, data literacy, and mathematical literacy into mathematics education without compromising foundational mathematical knowledge and skills.

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