

Adaptive Strategies of General Mathematics Teachers in Implementing the Strengthened Senior High School Curriculum

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ABSTRACT

The implementation of the Strengthened Senior High School Curriculum has placed increasing demands on teachers to adapt their instructional practices, particularly in General Mathematics where learners often exhibit diverse levels of readiness. Despite curriculum reforms, persistent gaps remain in understanding how teachers navigate instructional challenges and which strategies effectively support learner learning. Addressing this gap, the present inquiry explored the adaptive strategies employed by General Mathematics teachers, the factors influencing these strategies, and their impact on classroom practices and learning outcomes. Using a qualitative descriptive approach, the study gathered data from General Mathematics teachers through semi-structured interviews. The responses were analyzed using thematic analysis to generate patterns across challenges, strategies, and influencing factors. Findings revealed that teachers encounter significant challenges including foundational learner learning gaps, limited instructional time, resource shortages, and learner-related issues such as math anxiety and low motivation. To respond, teachers employ diverse adaptive strategies such as scaffolding, differentiated instruction, contextualization, technology integration, and flexible assessments. These strategies are shaped by learner needs, availability of resources, administrative support, and teacher experience. The adaptive practices resulted in improved learner comprehension, increased engagement, enhanced confidence, reduced anxiety, and a shift toward more learner-centered instruction. Overall, the study concludes that teacher adaptability is essential for the successful implementation of General Mathematics under the Strengthened SHS Curriculum. The findings imply the need for sustained professional development, stronger institutional support, and improved resource allocation to ensure that adaptive practices are consistently implemented and optimized for learner success.

Keywords: Adaptability, General Mathematics, Differentiated Instruction, Teacher Strategies, Strengthened Senior High School Curriculum

INTRODUCTION

The implementation of the Strengthened Senior High School (SHS) Curriculum under the Philippine K to 12 Program significantly redesigned the teaching and learning landscape, requiring both learners and teachers to navigate new academic standards and instructional demands. Among the core subjects in Senior High School, General Mathematics occupied a central role because it provided learners with essential competencies in logical reasoning, problem-solving, and quantitative literacy skills that were vital for academic advancement, workforce readiness, and lifelong learning. The subject not only strengthened learners' cognitive foundations but also supported their ability to make informed decisions in real-life contexts where mathematics was applied. Researchers have long emphasized that the effectiveness of any curricular reform was not solely dependent on the quality of its design but was equally determined by the ways teachers interpreted, adapted, and delivered it in diverse classroom settings (Fullan, 2016; Darling-Hammond, 2017). Mathematics instruction posed unique challenges because learners frequently experienced difficulties in conceptual understanding, lacked motivation, and even developed anxiety toward the subject. In this regard, the adaptability of teachers became a crucial factor in ensuring that classroom instruction remained both meaningful and effective. Studies showed that teachers who employed learner-centered, flexible, and innovative strategies were better equipped to address the varying needs of learners, respond to contextual challenges, and create an environment that fostered resilience and engagement (Collie & Martin, 2016). These findings underscored that adaptability was not a supplementary

attribute but rather a core capacity that enabled teachers to sustain effective instruction amidst evolving educational landscapes.

Despite this recognition, gaps persist in the body of literature, particularly within the Philippine educational context. Much of the existing research on the K to 12 reforms has focused primarily on policy evaluation, curriculum frameworks, and systemic or structural challenges, offering limited attention to how teachers themselves navigate the day-to-day implementation of the Strengthened Senior High School (SHS) Curriculum (DepEd, 2018; Deysolong, 2023; Quijano, 2023). National and institutional studies largely examined curriculum alignment, implementation readiness, and transition issues, often emphasizing administrative and systemic concerns rather than classroom-level instructional realities. Consequently, the voices and lived experiences of teachers, especially those directly responsible for enacting the curriculum, remain underrepresented in literature.

Specifically, studies that examine the adaptive instructional strategies of General Mathematics teachers are scarce, even though these strategies constitute the primary mechanisms through which curriculum reforms are translated into classroom practice. Teachers routinely confront structural constraints such as large class sizes, limited instructional resources, heterogeneous learner backgrounds, and the extensive range of competencies mandated by the curriculum.

Moreover, although international literature consistently links teacher adaptability to professional resilience, instructional effectiveness, and improved learner outcomes (Collie & Martin, 2016; Darling-Hammond, 2017), relatively few Philippine studies provide in-depth qualitative accounts of teachers' lived experiences, coping mechanisms, and adaptive decision-making processes in mathematics instruction. This lack of teacher-centered inquiry minimizes the human dimension of educational reform and overlooks the agency, creativity, and professional judgment teachers exercise in bridging the gap between curriculum policy and actual classroom practice. As a result, understandings of K to 12 implementations remain incomplete, detached from the realities faced by teachers and learners on the ground, and limited in explaining how adaptive strategies concretely shape classroom dynamics and influence learner learning outcomes in General Mathematics.

This study sought to address these gaps by investigating the adaptive strategies employed by General Mathematics teachers in implementing the Strengthened SHS Curriculum. Specifically, it aimed to document the challenges that teachers encountered, examine the strategies they employed to overcome these challenges, and analyze the factors that influenced their adaptive choices. By foregrounding teachers' voices and lived experiences, the study provided a grounded perspective on how curricular reforms were translated into actual instructional practice. In doing so, this research contributed not only to the theoretical discourse on adaptability, curriculum implementation, and instructional innovation but also to the practical field of mathematics education in the Philippines. Its findings were expected to inform teacher professional development programs, guide policymakers in refining curriculum support systems, and provide insights for educators seeking to enhance classroom practices. Ultimately, this study underscored the importance of teacher adaptability as a cornerstone of educational reform, offering a nuanced understanding of how General Mathematics teachers sustained effective instruction within the complexities of the Strengthened Senior High School Curriculum.

METHODS

This study employed a descriptive qualitative research design to capture a naturalistic, in-depth understanding of teachers' adaptive strategies as they implemented the Strengthened Senior High School (SHS) Curriculum in General Mathematics. Descriptive qualitative research was appropriate when the goal was to present a coherent and comprehensive account of events as experienced by individuals in their everyday contexts (Sandelowski, 2000). Rather than theorizing or abstracting phenomena, this approach prioritized clear, faithful, and richly textured descriptions of participants' perspectives and practices. The selected design aligned with the study's aim to illustrate how General Mathematics teachers responded to curricular requirements, instructional challenges, and contextual constraints in implementing the strengthened SHS curriculum.

The study was anchored in a constructivist–interpretivist paradigm that regarded reality as multiple, subjective, and co-constructed through social interaction (Creswell & Poth, 2018; Lincoln, Lynham, & Guba, 2011). Ontologically, the inquiry assumed a relativist stance: there was no single reality of teaching General

Mathematics; instead, teachers' lived experiences were shaped by beliefs, contexts, and classroom conditions (Denzin & Lincoln, 2018). Epistemologically, the study adopted a subjectivist view in which knowledge was co-created through dialogic engagement between the researcher and participants; the researcher's role was to interpret—not impose—meaning (Merriam & Tisdell, 2016). Methodologically, an inductive qualitative descriptive approach was used to allow patterns and themes to emerge from the data rather than from a priori hypotheses, ensuring that teachers' voices remained central to understanding adaptive strategies within curriculum reform (Sandelowski, 2000).

The study was conducted in selected public Senior High Schools in Bukidnon Province, specifically those implementing the Strengthened Senior High School Curriculum under the Department of Education. These schools were purposefully selected because they represented the authentic context in which General Mathematics was taught at the senior high level. Bukidnon Province offered a rich educational environment characterized by diverse learner profiles, varying resource conditions, and a mix of urban and rural teaching contexts—all of which shaped how teachers adapted their instructional practices. Conducting the study in these settings allowed the researcher to capture the lived realities of teachers who were actively navigating the challenges of implementing curriculum reforms while addressing learners' learning needs in mathematics. The accessibility of the research sites and the researcher's familiarity with the schools also facilitated a more in-depth and ethical data collection process.

The participants of this study were General Mathematics teachers who were teaching under the Strengthened SHS Curriculum in selected public senior high schools in Bukidnon. These teachers were chosen because they had direct and sustained experience in implementing the revised curriculum and therefore possessed valuable insights into the adaptive strategies employed in their instructional practice. The inclusion criteria required that participants be currently handling General Mathematics classes. Teachers who did not meet these criteria, such as those teaching other subjects or not currently handling SHS classes, were excluded.

The study utilized purposive sampling, a non-probability technique that involved selecting participants who were most knowledgeable about the phenomenon under investigation (Patton, 2015). This approach ensured that participants could provide rich, relevant, and diverse data about their adaptive teaching practices. In qualitative research, sample size depends on data saturation rather than numerical adequacy; hence, a sample of five to ten participants was considered sufficient to reach saturation and provide in-depth insights (Creswell & Poth, 2018; Guest, Namey, & Chen, 2020).

Data was collected primarily through semi-structured interviews, complemented by document review of relevant lesson plans or instructional materials shared by participants. The semi-structured interview format allowed flexibility in probing deeper into teachers' experiences while maintaining focus on the central research questions. The interview guide was designed based on the study's objectives and validated by two research experts to ensure clarity and alignment. Each interview lasted 45 to 60 minutes and was conducted either face-to-face or via online platforms, depending on participants' availability and convenience.

According to Kvale and Brinkmann (2015), semi-structured interviews were suitable for qualitative inquiries that aimed to understand participants' lived experiences and meaning-making processes. This method was particularly appropriate for the current study, as it provided space for teachers to articulate how they navigated curricular challenges, implemented adaptive strategies, and responded to the diverse needs of their learners. With participants' consent, interviews were recorded for accuracy and later transcribed verbatim for analysis. Supplementary data from teaching materials served to validate and enrich the interpretations drawn from the interviews.

Ethical standards were strictly observed throughout the research process, adhering to the principles outlined in the Philippine National Ethical Guidelines for Social Science Research (2017). Before data collection, formal permission was obtained from the school heads, and informed consent was secured from all participants. They were fully informed of the study's purpose, the voluntary nature of their participation, and their right to withdraw at any time without consequence. To uphold confidentiality and anonymity, pseudonyms were used in transcriptions and reports, and all identifying information was removed.

All collected data audio recordings, transcripts, and documents were stored securely in password-protected devices, accessible only to the researcher. In compliance with the Data Privacy Act of 2012 (RA 10173), data were handled with utmost care and were deleted after the completion of the study. The ethics of care guided the researcher's engagement with participants, emphasizing respect, empathy, and sensitivity to the teachers' workload and emotional well-being during interviews. This ensured that the research process remained humane, respectful, and ethically responsible from conceptualization to dissemination.

The collected data were analyzed using Thematic Analysis, following the framework proposed by Braun and Clarke (2006). This analytic approach was selected because it provides systematic yet flexible means of identifying, analyzing, and interpreting patterns or themes within qualitative data. The analysis followed six recursive phases. First, familiarization with the data was conducted through repeated reading of interview transcripts to gain an overall understanding of participants' responses. Second, initial codes were generated by identifying meaningful statements and significant ideas relevant to the research objectives. Third, related codes were clustered to search for potential themes. Fourth, the identified themes were reviewed to ensure internal coherence and accurate representation of the dataset. Fifth, themes were clearly defined and named to capture their core meanings. Finally, in the sixth phase, the themes were integrated, interpreted, and presented in the Results and Discussion sections, where they were analytically discussed in relation to the research questions, relevant literature, and the overall purpose of the study.

Throughout the process, reflective notes were used to document insights and analytic decisions, enhancing the depth and transparency of interpretation. Thematic Analysis allowed the emergence of meaningful insights into teachers' adaptive strategies and the contextual factors influencing them.

To ensure research consistency, the study adhered to Lincoln and Guba's (1985) criteria for trustworthiness: credibility, transferability, dependability, and confirmability. Credibility was achieved through member checking, where participants reviewed and validated the accuracy of transcriptions and interpretations. Transferability was enhanced by providing thick descriptions of the research context, participants, and findings to allow readers to assess applicability in similar contexts. Dependability was maintained through an audit trail documenting all research activities, decision points, and data management procedures. Lastly, confirmability was upheld through reflexivity—acknowledging the researcher's positionality—and triangulation of data sources to minimize bias. These strategies collectively ensured that the study's findings were trustworthy, consistent, and reflective of participants' authentic experiences.

RESULTS AND DISCUSSION

In line with the final phase of Braun and Clarke's (2006) thematic analysis, the findings in this chapter were integrated, interpreted, and synthesized to move beyond mere description of themes toward a deeper analytic explanation of the phenomenon. While the themes are presented according to the study's Statement of the Problem, they are discussed holistically, highlighting how challenges, adaptive strategies, contextual drivers, and instructional outcomes intersect in the implementation of General Mathematics under the Strengthened Senior High School Curriculum. This approach allows themes to collectively explain teachers' adaptive practices as grounded in their lived classroom experiences.

Integrated Challenges in the Implementation of General Mathematics

The findings reveal that the challenges in implementing General Mathematics in Senior High School are interconnected and mutually reinforcing. These challenges include varied learner readiness and foundational learning gaps, insufficient time allotment for complex competencies, limited and inadequate learning resources, and learner anxiety, low confidence, and behavioral concerns. Rather than occurring independently, these conditions collectively shape teachers' instructional decisions, classroom pacing, and learner engagement under the Strengthened SHS Curriculum.

Learners' insufficient prerequisite knowledge serves as the primary condition that influences the emergence of other challenges. Foundational gaps require teachers to slow down instruction and conduct frequent remediation, which intensifies time constraints within an already compressed curriculum. Limited instructional time, in turn,

restricts opportunities for extended practice and mastery, particularly when complex mathematical competencies are involved. This pressure is further compounded by the lack of updated and contextualized learning resources, which limits teachers' ability to provide varied activities, visual support, and differentiated instruction. As a result, instructional adjustments often rely on improvisation, leading to inconsistencies in content delivery and learning experiences.

These findings are consistent with previous studies indicating that misalignment between learner readiness and curriculum demands leads to pacing difficulties and superficial understanding (DepEd, 2018; Fullan, 2016). Resource inadequacies have similarly been identified as barriers to effective mathematics instruction, particularly in contexts requiring remediation and flexible teaching strategies. Moreover, repeated learning difficulties within constrained instructional environments contribute to learner anxiety, low confidence, and disengagement. Collie and Martin (2016) emphasized that such emotional and behavioral challenges demand high levels of teacher adaptability, highlighting the expanded role of teachers beyond content delivery in the Strengthened SHS Curriculum.

Taken together, the themes form a cyclical framework of constraints in General Mathematics instruction. Foundational learning gaps strain instructional time, time limitations expose resource inadequacies, and insufficient resources hinder effective remediation. These unresolved instructional challenges heighten learner anxiety and behavioral concerns, which further slowdown instruction and deepen learning gaps. This integrated interpretation establishes the context that necessitates teacher adaptability, providing the foundation for understanding the adaptive strategies discussed in the succeeding sections.

Adaptive Instructional Responses in General Mathematics

The findings indicate that teachers responded to instructional challenges in General Mathematics through a set of adaptive strategies that include scaffolding and breaking down complex lessons, differentiated instruction and targeted remediation, contextualization of lessons, integration of technology and digital tools, and the use of flexible and modified assessments. These practices were consistently employed to address learner diversity, bridge foundational gaps, and sustain engagement and understanding in heterogeneous Senior High School classrooms. These instructional responses function as a coherent system of support rather than independent teaching techniques. Scaffolding serves as the foundational strategy, enabling learners to process complex concepts through step-by-step guidance and gradual release of responsibility. Differentiated instruction builds upon scaffolding by adjusting tasks and pacing according to learners' readiness levels, ensuring that both struggling and advanced learners remain supported. Contextualization strengthens these approaches by anchoring mathematical concepts in real-life situations, making abstract ideas more meaningful and easier to internalize. The integration of technology further enhances understanding by providing visual, interactive, and alternative representations of concepts, while flexible assessment practices allow teachers to monitor learning progress in ways that are responsive to learner conditions and classroom realities.

These findings align with established learning theories and empirical studies. Flexible assessment practices further reflect adaptive instructional systems that align evaluation with learner readiness and curriculum demands (Fullan, 2016).

Taken together, these strategies form an adaptive instructional framework that enables teachers to navigate the complexities of General Mathematics instruction in Senior High School. Their effectiveness becomes clearer when examined alongside the contextual and professional factors that shape teachers' instructional decisions, which are discussed in the next section.

Intersecting Drivers of Teacher Adaptability in General Mathematics

The findings reveal that teachers' instructional adaptability in General Mathematics is primarily shaped by learner needs and diversity, availability of resources and technological tools, administrative and institutional support, and teachers' professional experience and training. These factors collectively influence how teachers select, modify, and implement instructional strategies in response to classroom realities under the Strengthened SHS Curriculum.

Learner readiness, motivation, learning styles, and behavior emerge as the most immediate and influential drivers of instructional decision-making. Teachers continuously observe learner responses and adjust strategies to ensure comprehension and engagement. However, the extent to which teachers can respond effectively is mediated by the resources available in their schools. Limited access to modules, ICT tools, and learning materials constrains the range of strategies teachers can employ, often requiring them to simplify or improvise instruction. Administrative and institutional support further shapes teachers' capacity to adapt by either enabling or restricting access to resources, professional guidance, and opportunities for instructional innovation. Teacher experience and training intersect with these conditions, as more experienced and professionally prepared teachers are better equipped to anticipate challenges, manage diverse learners, and maximize available resources.

These findings align with learner-centered teaching frameworks, which emphasize that effective instruction begins with learners' actual conditions rather than rigid curriculum demands (Darling-Hammond, 2017). Studies have also shown that resource availability directly affects instructional quality and consistency, particularly in contexts requiring flexible and differentiated teaching approaches (DepEd, 2018). Moreover, educational change literature highlights the role of supportive leadership in fostering teacher agency, innovation, and adaptive capacity (Fullan, 2016). The influence of teacher experience and continuous professional development further supports research linking adaptability to reflective practice, resilience, and instructional effectiveness (Collie & Martin, 2016).

Taken together, these themes form a contextual–professional framework of teacher adaptability in General Mathematics. This framework explains how adaptability emerges from the interaction between learner characteristics, institutional conditions, and teacher professional capacity, setting the stage for understanding the instructional outcomes of adaptive teaching.

Instructional Outcomes of Adaptive Teaching in General Mathematics

The findings indicate that adaptive teaching practices in General Mathematics led to improved learner comprehension and conceptual understanding, increased engagement, participation, and confidence, reduced mathematics anxiety, and a shift toward more learner-centered and flexible teaching practices. These outcomes collectively reflect the impact of teachers' responsiveness to learner needs and classroom realities under the Strengthened SHS Curriculum.

Improved comprehension and conceptual understanding emerged as a direct result of instructional strategies such as scaffolding, contextualization, and differentiation, which enabled learners to process complex concepts more effectively. As understanding increased, learners became more engaged and confident, participating actively in discussions and problem-solving activities. Technology integration and real-life examples further strengthened engagement by making lessons more interactive and meaningful. Reduced mathematics anxiety accompanied these gains, as simplified explanations, visual supports, and flexible pacing created a supportive learning environment where learners felt more willing to attempt tasks and express ideas. These positive learner outcomes, in turn, encouraged teachers to adopt more reflective, flexible, and learner-centered practices, reinforcing a continuous cycle of adaptation and improvement.

These findings are consistent with prior research demonstrating that differentiated and adaptive instruction significantly enhances conceptual understanding, learner engagement, and academic performance in mathematics (Tomlinson, 2014; Hmelo-Silver, Duncan, & Chinn, 2007). Studies further indicate that technology-supported and interactive instructional approaches contribute to sustained learner engagement, deeper understanding, and increased confidence by providing multiple representations and learning pathways (Schunk, Meece, & Pintrich, 2014). Moreover, research in mathematics education highlights that affective factors such as confidence and reduced anxiety play a critical role in learners' persistence, problem-solving ability, and achievement (Pekrun, 2006; Collie & Martin, 2016).

Taken together, these themes demonstrate that teacher adaptability functions as the central analytic mechanism linking instructional challenges, adaptive strategies, contextual drives, and positive learning outcomes. This synthesis represents the final phase of thematic analysis, where findings are interpreted to explain how adaptive

teaching practices support the effective implementation of the Strengthened Senior High School Curriculum in General Mathematics.

CONCLUSION AND RECOMMENDATION

General Mathematics teachers face multifaceted challenges in implementing the Strengthened SHS Curriculum. These include significant foundational learning gaps, insufficient time for complex competencies, limited and outdated learning resources, and learner-related concerns such as anxiety, low confidence, and inconsistent motivation. These challenges reveal that the curriculum expectations are often misaligned with learners' actual preparedness and with the available support structures in schools. Thus, teachers must consistently compensate for systemic gaps through adjustments in pacing, materials, and instructional delivery. To address these challenges, teachers implement diverse and dynamic adaptive strategies that blend traditional and innovative approaches. The most effective strategies include scaffolding, differentiated instruction, contextualized learning, integration of digital tools, and flexible assessments.

These strategies allow teachers to accommodate varied readiness levels, promote sustained engagement, and support learners' conceptual understanding. The adaptability demonstrated by teachers reflects their professional commitment and pedagogical creativity in responding to learner needs. The choice of adaptive strategies is primarily shaped by learner needs and learning diversity, which remain the most powerful influences on instructional decisions. Additional factors include availability of resources, administrative support, and teachers' experience and training. These findings indicate that adaptability is not solely an individual teacher trait but is shaped by the larger instructional environment, institutional culture, and access to professional development. Teachers who receive greater support and have richer professional backgrounds are more capable of implementing flexible and effective approaches. The application of adaptive strategies leads to meaningful improvements in both teaching practices and learners learning outcomes. Learners demonstrate enhanced comprehension, higher engagement, improved confidence, and reduced math anxiety. Teachers likewise shift toward more learner-centered, flexible, and reflective pedagogies, contributing to better classroom dynamics and more responsive instruction. Overall, adaptive strategies foster a learning environment where learners feel supported and where instructional methods evolve based on learner needs. The study concludes that teacher adaptability is a critical component in the effective implementation of the Strengthened SHS Curriculum in General Mathematics. Despite structural and learner-related challenges, teachers succeed in promoting learning through strategic, intentional, and flexible approaches. Effective curriculum implementation, therefore, requires not only competent teachers but also adequate resources, institutional support, and a learner-responsive educational system that recognizes the complex realities of mathematics teaching in Senior High School.

Based on the findings of this study, it is recommended that the Department of Education and school administrators strengthen the alignment between Junior High School and Senior High School mathematics curricula. This may be achieved through curriculum mapping, bridge programs, and targeted remediation initiatives designed to address recurring foundational gaps. Providing structured support for prerequisite competencies will help ensure that learners enter Senior High School with the necessary mathematical readiness to engage meaningfully with complex General Mathematics concepts. It is further recommended that schools provide sustained professional development for General Mathematics teachers, with a focus on adaptive instruction, differentiated strategies, use of technology, and contextualization of mathematical concepts. Training programs should be continuous rather than episodic and should include workshops, peer mentoring, and professional learning communities. By enhancing teachers' pedagogical adaptability, they will be better equipped to manage diverse learners, respond to classroom challenges, and implement the Strengthened SHS Curriculum effectively. Additionally, the provision of adequate and updated learning resources must be prioritized. Schools and local education authorities should invest in instructional materials such as contextualized modules, visual aids, digital tools, and classroom technologies that support learner engagement and conceptual understanding. Ensuring equitable access to these resources will reduce teachers' reliance on improvisation and enable more meaningful and innovative learning experiences for learners. Finally, it is recommended that institutional support systems be strengthened to enhance teacher well-being and instructional efficiency. School leaders should cultivate an environment that encourages collaboration, reflective practice, and open communication. Administrative support—such as providing flexible schedules, recognizing teacher initiatives, and ensuring manageable workloads—can significantly improve

teachers' motivation and capacity to implement adaptive strategies. By fostering supportive and responsive school climates, the implementation of the Strengthened SHS Curriculum can become more effective and sustainable.

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