

# Upskilling Grade 5 Learners' Math Competencies: A Strategy- Based Approach

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## ABSTRACT

This research determined the effectiveness of strategy-based teaching in enhancing the mastery of Quarter 2 Mathematics competencies among Grade 5 learners at Cabancalan II Elementary School, Schools Division of Mandaue City, during the School Year 2025–2026. Specifically, it sought to describe the demographic profiles of teachers and learners; assess the status of the implementation of strategy-based Mathematics teaching; determine the level of learners' mathematics competency; examine the significant relationship between the two variables; and identify issues and challenges encountered in implementation. The study utilized a descriptive-correlational research design, involving 4 Grade 5 Mathematics teachers and 50 learners as respondents. Data were gathered using validated survey questionnaires and summative test results, analyzed through weighted mean, standard deviation, and Pearson's  $r$  correlation. Findings revealed that teachers demonstrated a high level of implementation of strategy-based teaching (overall WM = 3.79), particularly in aligning instructional approaches with learning competencies. Learners, on the other hand, showed a high level of mathematics performance (overall WM = 3.57), with divisibility rated highest and division of fractions lowest. Statistical analysis showed a significant positive relationship ( $r = 0.4012$ ,  $p = 0.0175$ ) between the degree of teaching implementation and learners' performance. Teachers, however, identified challenges such as large class sizes, limited resources, and time constraints. The study concluded that effective strategy-based teaching significantly improves learners' mathematical achievement. A Strategy-Based Mathematics Instructional Framework and Enrichment Activity Guide was developed as the primary output to strengthen instructional practices and promote sustained learner improvement.

**How to cite this paper:** Menchie S. Malinao | Rufino T. Tudlasan Jr "Upskilling Grade 5 Learners' Math Competencies: A Strategy- Based Approach" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-10 | Issue-1, February 2026, pp.658-692, URL: [www.ijtsrd.com/papers/ijtsrd100115.pdf](http://www.ijtsrd.com/papers/ijtsrd100115.pdf)



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**KEYWORDS:** Administration and Supervision, Strategy-based teaching, Mathematics performance, Instructional framework, Enrichment activities, Descriptive study, DepEd Mandaue City.

## 1. THE PROBLEM AND ITS SCOPE

### INTRODUCTION

#### Rationale of the Study

Mathematical competence is essential in the contemporary education system, enabling learners to critically engage with real-world issues, pursue advanced studies, and adapt to a data-driven society. Mathematics cultivates computational proficiency as well as logical reasoning, problem-solving capabilities, and critical thinking skills. The National Research Council (2021) asserts that mathematical competencies are vital life skills that transcend the classroom, impacting decision-making, financial literacy, and technological adaptability. Intermediate learners, specifically those in Grade 5, must achieve

proficiency in mathematical competencies to prepare for more advanced concepts in subsequent grades.

Notwithstanding its significance, mathematics remains one of the most challenging subjects for Filipino students. National and international large-scale assessments indicate enduring disparities in mathematics proficiency. The Trends in International Mathematics and Science Study (TIMSS 2019), referenced in DepEd (2021), indicated that Filipino Grade 4 students performed markedly below the international average in mathematics. Despite the implementation of numerous reforms, students

continue to struggle with grade-level competencies, especially in fractions, decimals, problem-solving, and application tasks during Quarter 2 of Grade 5. These challenges underscore the pressing necessity to reevaluate and enhance instructional strategies that specifically aim at competency mastery.

Instructional strategies are essential in determining the methods of teaching and learning mathematics. Studies indicate that employing learner-centered and contextualized strategies improves motivation and achievement in mathematics (Tan, 2022). Differentiated instruction, scaffolding, and strategy-based teaching methods have been linked to improved performance and a deeper conceptual understanding in elementary students (Calleja & Villanueva, 2023). Nevertheless, research suggests that numerous teachers continue to depend on conventional lecture techniques, which may be inadequate for fostering higher-order cognitive skills or accommodating varied learning requirements (Alcantara, 2021).

Recent studies emphasize that effective mathematics instruction relies on the integration of research-based strategies that promote both conceptual understanding and learner engagement. Structured Inquiry-Based Learning encourages students to actively explore and solve problems rather than passively receive information, fostering higher-order thinking and resilience in mathematics (Zulkardi & Putri, 2021). Meanwhile, Concrete-Representational-Abstract (CRA) sequencing has been shown to significantly improve comprehension among diverse learners by scaffolding learning from manipulatives to symbolic notation (Rahman & Mahmud, 2022). To further enhance participation, Collaborative Learning and Peer Tutoring strategies have proven beneficial in developing communication skills and mathematical confidence, particularly in heterogeneous classrooms (Garcia & Villanueva, 2023). Additionally, integrating Technology-Assisted Instruction through interactive platforms such as GeoGebra, Quizizz, or Desmos has demonstrated positive impacts on learner motivation and retention (Santos & Lopez, 2020). Collectively, these strategies provide a strong foundation for designing responsive and inclusive mathematics interventions aligned with 21st-century learning needs. The Philippine Department of Education has highlighted competency-based learning in the K-12 curriculum, asserting that instruction should concentrate on the mastery of fundamental skills through diverse and innovative methodologies (DepEd, 2022). However, a disparity persists between

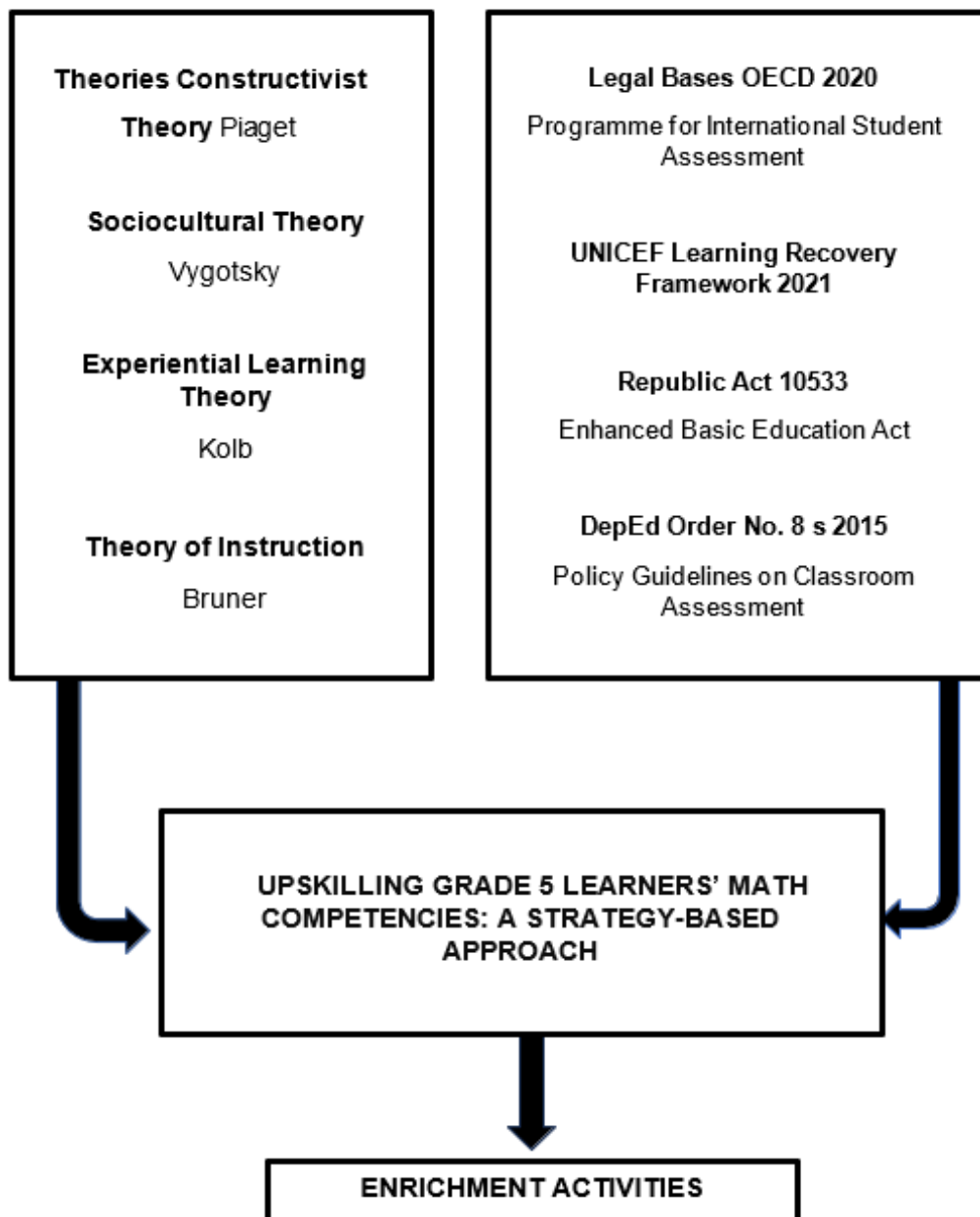
policy and implementation, especially in public schools where teachers encounter obstacles such as substantial class sizes, restricted instructional time, and insufficient contextualized teaching resources (Garcia & Reyes, 2021). This disparity frequently leads to learners encountering difficulties with fundamental mathematics skills, particularly in the second quarter when instruction shifts from basic operations to more abstract concepts such as fractions, decimals, ratios, proportions, and problem-solving activities.

In Region VII, performance reports consistently emphasize mathematics as a domain requiring immediate intervention. The Regional Monitoring and Evaluation Report (DepEd Region VII, 2023) indicated that Grade 5 learners exhibited inconsistent mastery of Quarter 2 competencies, particularly showing notable deficiencies in problem-solving and concept application. Teachers recognized the challenge of reconciling curriculum completion with substantive strategy-oriented teaching. This highlights the need for a systematic investigation into the most effective teaching strategies for enhancing Grade 5 learners' mathematics competencies.

This study aims to evaluate the efficacy of strategy-based methods in improving the mathematical skills of Grade 5 learners during Quarter 2. This study seeks to offer evidence-based recommendations for teachers by examining instructional strategies, including contextualized problem-solving, collaborative learning, and scaffolding. The outcomes are anticipated to enhance learner performance and enrich pedagogical practices in accordance with competency-based standards. The study aims to assist the Department of Education in its overarching objective of enhancing mathematics proficiency and equipping learners with skills vital for lifelong learning.

### **Theoretical/ Conceptual Background**

Mathematics instruction is informed by diverse learning theories that elucidate how learners acquire, process, and apply mathematical knowledge. Piaget's Constructivist Theory, further developed by contemporary research in mathematics education, asserts that learners construct knowledge through active engagement with problems and contexts. Larkin (2021) asserts that constructivist methodologies facilitate learners in linking new concepts to previous experiences, a principle essential for Grade 5 learners addressing more abstract subjects such as fractions and decimals.



**Figure 1 Theoretical Framework of the Study**

The constructivist perspective asserts that learners actively create their own knowledge through engagement with experiences, rather than passively absorbing information. In mathematics, this indicates that learners acquire knowledge most effectively when they investigate, manipulate, and apply mathematical concepts in meaningful contexts. Larkin (2021) asserts that constructivist methodologies promote the integration of new concepts with existing knowledge, thereby enhancing profound conceptual comprehension. For fifth-grade learners, this is particularly crucial in the second quarter when they confront fractions, decimals, and problem-solving activities that necessitate the application of previously acquired skills.

For teachers, constructivism transforms their role from mere conveyors of knowledge to facilitators of learning and understanding. This necessitates the creation of assignments that compel learners to

engage in critical thinking and independently derive solutions. Teachers must facilitate student learning by offering opportunities for exploration, problem-based learning, and reflection. In practice, constructivist teaching promotes active learner engagement, enabling educators to identify learner misconceptions and learning deficiencies that can be addressed through targeted strategies.

Vygotsky's Sociocultural Theory, which underscores the Zone of Proximal Development (ZPD) and scaffolding, complements this concept. Recent research indicates that collaborative learning in mathematics markedly enhances problem solving abilities when teachers intentionally offer assistance within learners' Zone of Proximal Development (Tang & Lim, 2022).

Vygotsky's Sociocultural Theory emphasizes the significance of social interaction and scaffolding in the learning process. The Zone of Proximal

Development (ZPD) delineates the disparity between learners' independent capabilities and their potential accomplishments with assistance. Tang and Lim (2022) argue that scaffolding through peer collaboration and teacher assistance enhances learners' problem-solving skills in mathematics. Collaborative activities, such as group problem-solving tasks, provide Grade 5 learners with opportunities to learn from peers while building confidence in addressing Quarter 2 competencies.

Teachers play a pivotal role in scaffolding, progressively delegating responsibility to learners as they achieve proficiency. This necessitates a meticulous evaluation of learners' existing competencies and the formulation of interventions customized to their Zone of Proximal Development (ZPD). This approach fosters collaborative learning, critical discourse, and a deeper appreciation for diverse strategies in mathematical problem-solving among learners. Teachers, consequently, benefit from increased classroom engagement and improved learner outcomes through collaborative accountability in the learning process.

Kolb's Experiential Learning Theory continues to exert significant influence in mathematics education. Engaging learners in tangible tasks accompanied by reflection fosters conceptual comprehension and practical problem-solving abilities.

Kolb's theory emphasizes the learning cycle, which comprises concrete experience, reflective observation, abstract conceptualization, and active experimentation. In mathematics, learners must not only execute calculations but also consider their methodologies, scrutinize errors, and devise strategies for novel problems. Tan (2022) emphasized that experiential strategies, including practical tasks and real-world problem scenarios, improve Grade 5 learners' proficiency in fractions and ratios.

Experiential learning prompts teachers to create lessons that link mathematical concepts to practical applications, such as utilizing grocery receipts for decimal calculations or measuring objects for fraction exercises. Learners gain advantages by recognizing the applicability of mathematics to their everyday experiences, thereby enhancing motivation and retention. Teachers, in turn, create more engaging lessons and observe increased learner engagement, thereby bridging the gap between theory and application. Tan (2022) established that experiential strategies enhance learners' application of fraction and ratio concepts in middle-grade mathematics.

Bruner's Theory of Instruction emphasizes the significance of enactive, iconic, and symbolic

representations. Implementing this theory in mathematics facilitates the connection between tangible manipulatives and abstract symbols, serving as an effective strategy for Quarter 2 lessons (Calleja & Villanueva, 2023).

Bruner posited that learners progress from enactive (tactile) to iconic (visual) to symbolic (abstract) representations of knowledge. This theory emphasizes the necessity of using concrete manipulatives before introducing abstract concepts in mathematics education. Calleja and Villanueva (2023) established that connecting these representations enhances Grade 5 learners' comprehension of Quarter 2 concepts such as decimals and fractions.

Bruner's framework provides teachers with a structured approach to lesson sequencing, beginning with concrete experiences, progressing to visual representations, and ultimately advancing to abstract symbols and equations. This facilitates learners' gradual comprehension of concepts, thereby minimizing frustration. Learners benefit from more explicit links between experiential activities and theoretical concepts, while educators acquire a pragmatic framework for scaffolding instruction that accommodates varied learning requirements.

Another guiding framework is Bloom's Taxonomy of Educational Objectives, which emphasizes the hierarchical advancement of cognitive skills from recall to creation. Recent research emphasizes the need to create mathematical tasks that transcend mere rote memorization and focus on higher-order cognitive skills (Garcia & Reyes, 2021).

Bloom's Taxonomy is fundamental to instructional design, emphasizing the advancement from lower-order skills (remembering, understanding) to higher-order thinking (analyzing, evaluating, creating). Garcia and Reyes (2021) asserted that mathematical tasks should prioritize critical thinking and problem-solving over mere memorization. For Grade 5 Quarter 2, this entails crafting lessons in which learners not only calculate fractions but also utilize them in contextual problem-solving.

Bloom's framework helps teachers establish explicit learning objectives and assessment instruments that align with the mastery of competencies. Learners are instructed to progress beyond mechanical computations and engage in critical thinking, allowing them to address word problems and practical applications. Teachers gain from a systematic framework for differentiating instruction, while students develop enhanced reasoning abilities that facilitate sustained success.

Gardner's Multiple Intelligences Theory has had a significant impact on mathematics education. A study by Lopez (2020) demonstrated that acknowledging diverse learner strengths, such as logical-mathematical or visual-spatial intelligence, enables educators to implement varied strategies to enhance mastery of competencies.

Gardner's theory acknowledges that learners exhibit diverse strengths across multiple intelligences, such as logical-mathematical, visual-spatial, and interpersonal. Lopez (2020) demonstrated that engaging these intelligences through varied instructional strategies enhances learners' performance in mathematics. For instance, visual learners may benefit from diagrams when addressing fraction problems, whereas kinesthetic learners might use manipulatives such as fraction strips.

This theory emphasizes the importance of differentiated instruction for teachers, ensuring that lessons cater to diverse learning styles and intelligences. Teachers exhibit increased creativity and adaptability in lesson design, while learners experience heightened inclusion and engagement. This acknowledgment affirms learners' distinct abilities and fosters a confident approach to mathematics. Teachers gain from enhanced classroom inclusivity and elevated learner performance.

Bandura's Social Cognitive Theory is equally pertinent, highlighting self-efficacy and observational learning. Learners with elevated mathematics self-efficacy are more inclined to persevere in problem-solving endeavors. Recent research has validated that strategy-based peer modeling enhances confidence and performance in mathematics classrooms (Alcantara, 2021).

Bandura underscored the significance of self-efficacy, observational learning, and modeling in the educational context. Learners who possess confidence in their mathematical abilities are more inclined to persevere in solving problems. Alcantara (2021) discovered that peer modeling and teacher motivation enhance mathematics performance in intermediate grades.

Consequently, teachers must deliberately cultivate learner confidence through positive reinforcement and by exemplifying problem-solving techniques. For learners, witnessing effective strategies employed by peers or teachers enhances their confidence in their capacity to master Quarter 2 competencies. Teachers, consequently, foster a more supportive classroom environment in which learners feel motivated to take risks and learn from their errors.

The Cognitive Load Theory offers insights into structuring information to prevent overwhelming

working memory. Effective instructional strategies that equilibrate conceptual load have demonstrated improvements in retention and problem-solving efficacy in mathematics (Mendoza & Santos, 2022).

Cognitive Load Theory emphasizes the finite capacity of working memory and asserts that instruction should refrain from inundating learners with excessive information simultaneously. Mendoza and Santos (2022) demonstrated that simplifying instructions and deconstructing problem-solving processes improved learners' proficiency in fractions and decimals.

This theory emphasizes the importance of teachers organizing lessons clearly and presenting information in digestible segments. By doing so, learners mitigate cognitive overload and enhance concept retention. Learners experience diminished anxiety and enhanced concentration, whereas teachers note more seamless transitions from fundamental skills to intricate problem-solving.

The Self-Determination Theory (Deci & Ryan), when applied to mathematics, highlights autonomy, competence, and relatedness. Learners exhibit heightened engagement when strategies incorporate options and practical applications. Villarín and Cruz (2023) discovered that contextualized tasks in mathematics enhance intrinsic motivation in the Philippine context.

This theory emphasizes autonomy, competence, and relatedness as fundamental motivators. When learners perceive their competence, possess significant options, and recognize real-life connections, their motivation to engage in learning increases. Villarín and Cruz (2023) discovered that contextualized strategies enhance intrinsic motivation in mathematics education.

For teachers, implementing this theory involves providing learners with opportunities for autonomy, such as allowing them to choose problems or apply mathematical concepts to their personal interests. Learners, consequently, exhibit enhanced involvement and accountability in their educational process. Teachers gain advantages by cultivating a classroom atmosphere where students are driven by authentic interest and curiosity rather than mere compliance.

Ultimately, Metacognitive Theory emphasizes the significance of self-regulation in the learning process. Learners who evaluate and modify their problem-solving strategies exhibit enhanced mastery of competencies (Ortega, 2021). These theories collectively establish a robust framework for analyzing how strategy-based methodologies can

enhance Grade 5 Quarter 2 mathematics competencies.

Metacognition encompasses the awareness and regulation of an individual's cognitive processes. In mathematics, this involves learners evaluating their problem-solving techniques, assessing the results, and implementing necessary modifications. Ortega (2021) noted that learners with robust metacognitive abilities excel at resolving complex word problems.

This theory advocates for teachers to incorporate reflective practices into mathematics instruction, including prompting students to articulate their reasoning or assess their solutions. It fosters independence and resilience in learners, enabling them to confront the demanding competencies of Quarter 2. Teachers gain advantages by understanding students' reasoning processes, enabling more precise interventions.

In addition to theoretical foundations, the study is underpinned by various legal and policy frameworks. UNESCO's Education 2030 Agenda emphasizes the importance of equitable and quality education, with mathematics proficiency being crucial to Sustainable Development Goal 4 (UNESCO, 2022). The Southeast Asian Ministers of Education Organization (SEAMEO) advocates for the enhancement of mathematics education to fulfill the requirements of 21st-century skills (SEAMEO, 2021). The Philippine K–12 Curriculum Framework emphasizes competency-based instruction, highlighting the mastery of essential mathematical skills (DepEd, 2022). The Basic Education Learning Continuity Plan (BE-LCP), developed in response to COVID-19, instructs teachers to implement innovative strategies to alleviate learning loss in fundamental subjects, including mathematics (DepEd, 2020). The Monitoring and Evaluation Report from DepEd Region VII emphasizes the critical need to address deficiencies in Grade 5 Quarter 2 mathematics competencies (DepEd Region VII, 2023).

The Programme for International Student Assessment (PISA) serves as a global benchmark for assessing learners' competencies in mathematics, reading, and science. The 2018 PISA results, which positioned the Philippines among the lowest in mathematics performance, remain a benchmark for reforms. The OECD (2020) emphasizes in the PISA framework the necessity of providing learners with applied problem-solving skills rather than merely procedural knowledge. This highlights the necessity for strategy-oriented methodologies that transcend memorization and equip Grade 5 learners for forthcoming evaluations that assess critical thinking and application skills.

The UNICEF Learning Recovery Framework (2021) is another pertinent global framework that offers guidance for mitigating learning losses associated with the pandemic. Mathematics was one of the subjects most impacted by diminished classroom interaction and restricted access to resources. UNICEF advocates for the execution of learner-centered methodologies and remedial initiatives to restore fundamental competencies. This corresponds with the study's emphasis on enhancing Grade 5 learners' Quarter 2 mathematics competencies via targeted strategies that address identified deficiencies.

The Enhanced Basic Education Act of 2013 (Republic Act 10533) is a fundamental policy at the national level that underpins the K–12 curriculum. The Act stipulates that instructional methods must be learner-centered, developmentally suitable, and grounded in research, with the attainment of competency as the primary objective. The Department of Education (2022) affirmed that competency-based instruction in mathematics is crucial for cultivating higher-order thinking skills. This legal requirement offers a compelling rationale for investigating strategy-based methodologies in the present study.

The Philippine Professional Standards for Teachers (PPST) emphasize the importance of teachers employing differentiated strategies to meet the varied learning needs of their learners. The Department of Education (2021) asserted that proficient teachers must utilize diverse instructional strategies to guarantee student mastery of curriculum competencies. This policy framework emphasizes teachers' obligation to choose and implement strategies that enhance learners' mathematical skills, rendering it pertinent to this study.

The Regional Basic Education Learning Recovery and Continuity Plan (BELRCP 2022–2025) for Central Visayas offers a tailored framework for educational recovery initiatives. It emphasizes literacy and numeracy as critical domains necessitating prompt intervention. The DepEd Region VII (2023) report indicated ongoing competency deficiencies among Grade 5 learners in mathematics, specifically regarding Quarter 2 skills, including fractions, decimals, and problem-solving. This regional directive emphasizes the importance of exploring strategy-oriented methods to address learning deficiencies specific to the school context in Central Visayas.

In support of quality standards-based instruction, DepEd Order No. 8, s. The 2015 *Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program* institutionalize a unified

framework for assessing learner performance in both elementary and secondary schools. It emphasizes that assessment must be an ongoing, integrative, and learner-centered process that informs instruction rather than merely measuring outcomes. The order highlights the balanced use of formative assessment (assessment *for* learning) and summative assessment (assessment *of* learning), ensuring that teachers not only evaluate academic progress but also provide continuous feedback that supports remediation and enrichment. By aligning assessment practices with content standards, performance standards, and learning competencies, the policy ensures fairness, clarity, and consistency in grading across subject areas. Furthermore, it promotes the use of varied, authentic, and inclusive assessment tools-catering to diverse learners and encouraging the development of critical thinking, creativity, and real-life problem-solving skills. This directive provides a strong foundation for instructional planning and accountability, making it a key reference in the development of intervention programs and teaching innovations.

This study employs a conceptual framework that positions instructional strategies as the intermediary between curriculum-based competencies and learner performance outcomes, grounded in these theories and legal foundations. The integration of constructivist, experiential, motivational, and metacognitive principles provides the foundation for examining how strategy-based instruction can bridge competency gaps in mathematics. Simultaneously, compliance with both global and national educational policies ensures that the research aligns with ongoing reforms and the overarching objective of enhancing mathematics proficiency among Filipino learners.

Effective mathematics instruction integrates diverse strategies to develop conceptual understanding, procedural fluency, and problem-solving. Students are encouraged to participate and think more deeply in modern math classes. Strategy-rich instruction helps students analyze mathematical structures, build conceptual connections, and regulate their understanding during problem solving, according to Sullivan et al. (2020). These methods emphasize meaningful learning over memorization.

One popular math teaching method is explicit strategy instruction, where teachers demonstrate steps and thinking processes before giving students practice. Rosenshine (2022) found that explicit instruction and worked examples significantly improve math accuracy and speed. This strategy helps students understand the fundamentals, reducing cognitive overload during complex problem-solving.

Diagrams, bar models, number lines, and graphic organizers are also important. Visual aids help students understand abstract concepts and mathematical relationships. Visualization strategies help struggling learners understand symbolic information by making it concrete, according to Cruz and Cabello (2023). Visual models aid higher-order reasoning in multi-step word problems.

Math circles, Think-Pair-Share, and group investigations are also important in modern math instruction. These methods help students express their ideas, negotiate meaning, and compare problem-solving methods. When the teacher leads structured discussions, collaborative mathematics activities improve conceptual understanding and mathematical communication, according to Tan and Bautista (2021).

Problem-based learning (PBL), which utilizes real-world issues, is also a practical approach. PBL promotes inquiry, reasoning, and metacognition. PBL students learn resilience and adaptive reasoning by analyzing, planning, and executing solutions independently or collaboratively, according to Kim and Park (2022). Math concepts are better retained and transferred this way.

To support diverse learners, teachers differentiate content, process, and product based on readiness, interests, and learning profiles. Differentiation makes complex math fair. Lorenzo and Santos (2022) found that differentiated mathematics instruction increased students' engagement and self-efficacy, particularly for those with varying proficiency levels or linguistic backgrounds.

Strategies organize problem-solving instruction. Teachers model a strategy, guide students through practice, and allow them to master it independently using the Model-Lead-Test (MLT) method. Ramirez and Villanueva (2021) recommend the MLT model for multi-step computation and algebraic reasoning because scaffolded instruction gradually gives students responsibility.

The Polya Problem-Solving Model involves understanding the problem, planning, executing, and reflecting on the solution. Although Polya's framework is old, modern research continues to support it. Bernardo and Yu (2023) found that metacognitive prompts and Polya's model help students regulate their thoughts and solve non-routine tasks more accurately.

Mathematics uses the Cognitive Strategy Instruction (CSI) model extensively. Cognitive steps for encoding, transforming, and retrieving information are taught in CSI. According to Flores and Garcia

(2020), CSI helps students simplify complex problems, monitor their thinking, and apply systematic methods. CSI helps students with executive functioning and working memory issues.

Cognitive strategic theory states that learners actively construct meaning using visualization, classification, and inference. This theory supports explicit teaching of cognitive strategies to decode and understand word problems in mathematics. Mendoza (2022) suggests visualizing, paraphrasing, and identifying key relationships to reduce cognitive ambiguity in text-heavy mathematics.

Visualization strategies for word problems are explicitly taught using cognitive strategic theory. To clarify relationships, teachers help students create diagrams, sketches, or bar models from verbal information. Visualizing word problems externalizes hidden quantitative relationships, helping learners manipulate and analyze information, according to Santos and Rivera (2021).

Cognitive strategic theory emphasizes the importance of planning, monitoring, and evaluation for effective self-regulation. Math students can check their understanding, identify errors, and refine their plans using these methods. Chua and Tan (2023) state that self-regulated strategy instruction enhances metacognition and complex problem-solving.

Clearly planned. Think-aloud modeling shows how expert mathematicians process information, identify key elements, and choose strategies in cognitive strategic theory instruction. That helps students internalize strategic thinking. Think-aloud modeling helps students solve multi-step word problems, according to Perez (2020).

Finally, cognitive strategic theory encourages scaffolded practice to help students apply strategies independently. Cognitive routines are internalized through guided visualization, problem decomposition, graphic organizers, and structured prompts. Díaz and Robles (2022) found that scaffolded strategic instruction improves the ability to solve higher-order tasks and retain problem-solving skills.

## THE PROBLEM

### Statement of the Problem

This research determined the effectiveness of strategy-based teaching in upskilling the mastery of Quarter 2 Mathematics competencies of Grade 5 learners at Cabancalan II Elementary School, Schools Division of Mandaue City, for the school year 2025–2026, as basis for designing strategy-based enrichment exercises.

This study specifically sought to answer the following questions:

1. What is the demographic profile of the respondent groups in terms of:
  - 1.1. Teachers'
    - 1.1.1. Age and gender,
    - 1.1.2. Highest Educational attainment,
    - 1.1.3. Length of teaching experience, and
    - 1.1.4. Trainings or seminars attended on mathematics pedagogy or strategy-based instruction;
  - 1.2. Learners'
    - 1.2.1. Age and gender,
    - 1.2.2. Study habits and home support in mathematics learning?
2. What is the status of strategy-based Mathematics teaching implementation in Grade 5 in terms of:
  - 2.1. Appropriateness of strategies,
  - 2.2. Teacher preparedness and pedagogical knowledge,
  - 2.3. Availability and use of instructional materials and learning resources,
  - 2.4. Learner engagement and participation, and
  - 2.5. Monitoring, feedback, and remediation practices?
3. What is the level of mathematics competency performance based on summative test results of the competencies in:
  - 3.1. Division of Fractions,
  - 3.2. Decimals,
  - 3.3. Divisibility, and
  - 3.4. Prime and composite numbers?
4. Is there a significant relationship between the status of strategy-based Mathematics teaching implementation and the level of mathematics competencies?
5. What issues and concerns were encountered by teachers in implementing strategy-based teaching in Mathematics for Grade 5?
6. Based on the findings, what Strategy-Based Enrichment Exercises can be developed?

### Null Hypothesis

Ho: There is no significant relationship between the status of strategy-based Mathematics teaching implementation and the level of mathematics competencies.

### Significance of the Study

This study determined the effectiveness of strategy-based teaching in enhancing the mathematics competencies of Grade 5 learners. The findings were expected to improve mathematics instruction, strengthen teaching strategies, and provide evidence-

based interventions addressing learning gaps in fractions, decimals, ratios, proportions, and real-life problem-solving contexts.

The study was advantageous to the following:

**Department of Education.** The results informed policy directions and curriculum enhancement by providing insights into practical strategies for teaching mathematics at the elementary level. These insights guided the design of professional development programs, monitoring frameworks, and resource allocation to improve numeracy across schools.

**Education Policymakers.** For education policymakers, the findings served as valuable evidence in designing or refining policies that promoted equitable and effective instructional practices. By presenting data-based insights on classroom realities and learner outcomes, the study helped policymakers identify gaps between policy intent and implementation, craft more responsive guidelines, allocate resources strategically, and establish support mechanisms that directly addressed the needs of both teachers and learners.

**Administrators.** School heads and instructional leaders utilized the findings to evaluate mathematics teaching practices, extend support through training on strategy-based instruction, and create intervention programs aligned with school improvement plans.

**Teachers.** The study served as a practical reference for teachers in applying, refining, and assessing instructional strategies. By identifying approaches that effectively improved learner performance, teachers were encouraged to adopt more data-driven and learner-centered methods in mathematics instruction.

**Parents/Guardians.** The findings raised awareness among parents of the benefits of strategy-based learning. They also emphasized the importance of home support by providing parents with ideas to reinforce mathematical skills through everyday applications.

**Learners.** The primary beneficiaries were Grade 5 learners, who gained improved mastery of mathematical competencies, enhanced problem-solving abilities, and increased confidence in applying mathematics in real-life situations, leading to better academic performance and readiness for higher-level learning.

**Community.** By strengthening mathematics education, the study contributed to building a more numerate community. It encouraged partnerships between schools, local stakeholders, and

organizations in promoting real-life applications of mathematics to develop problem-solvers in society.

**Researcher.** The conduct of the study enhanced the researcher's professional growth through the development of innovative, evidence-based instructional approaches. It also provided valuable experience in designing teaching guides adaptable to various contexts.

**Future Researchers.** This study served as a reference for future scholars exploring strategy-based instruction, mathematics competency development, or school-based interventions. It laid a foundation for further research on instructional design and learning improvement.

## RESEARCH METHODOLOGY

This section outlined the research methodology, design, setting, population, sampling, research instruments, data collection procedures, statistical analysis of data, and scoring techniques employed in the investigation of strategy-based instruction for Grade 5 Mathematics competencies at Cabanalan II Elementary School in Mandaue City.

### Design

The study employed a descriptive-correlational design. The descriptive component analyzed the implementation of strategy-based teaching in Grade 5 Mathematics, the challenges encountered by teachers, and the performance levels of learners in Quarter 2 competencies, including fractions, decimals, ratios, proportions, and real-life problem-solving applications. Meanwhile, the correlational component determined the relationship between the degree of strategy-based teaching implementation and the competency performance of Grade 5 learners.

This method was deemed appropriate as it enabled the researcher to describe teaching practices and learner performance while examining the relationship between instructional strategies and academic outcomes without manipulating any variable (Creswell & Creswell, 2018).

A quantitative methodology was utilized, incorporating data gathered from teacher and student questionnaires, as well as competency-based assessment results. This combination ensured a comprehensive understanding of how strategy-based teaching was applied in classrooms and how it influenced learner performance.

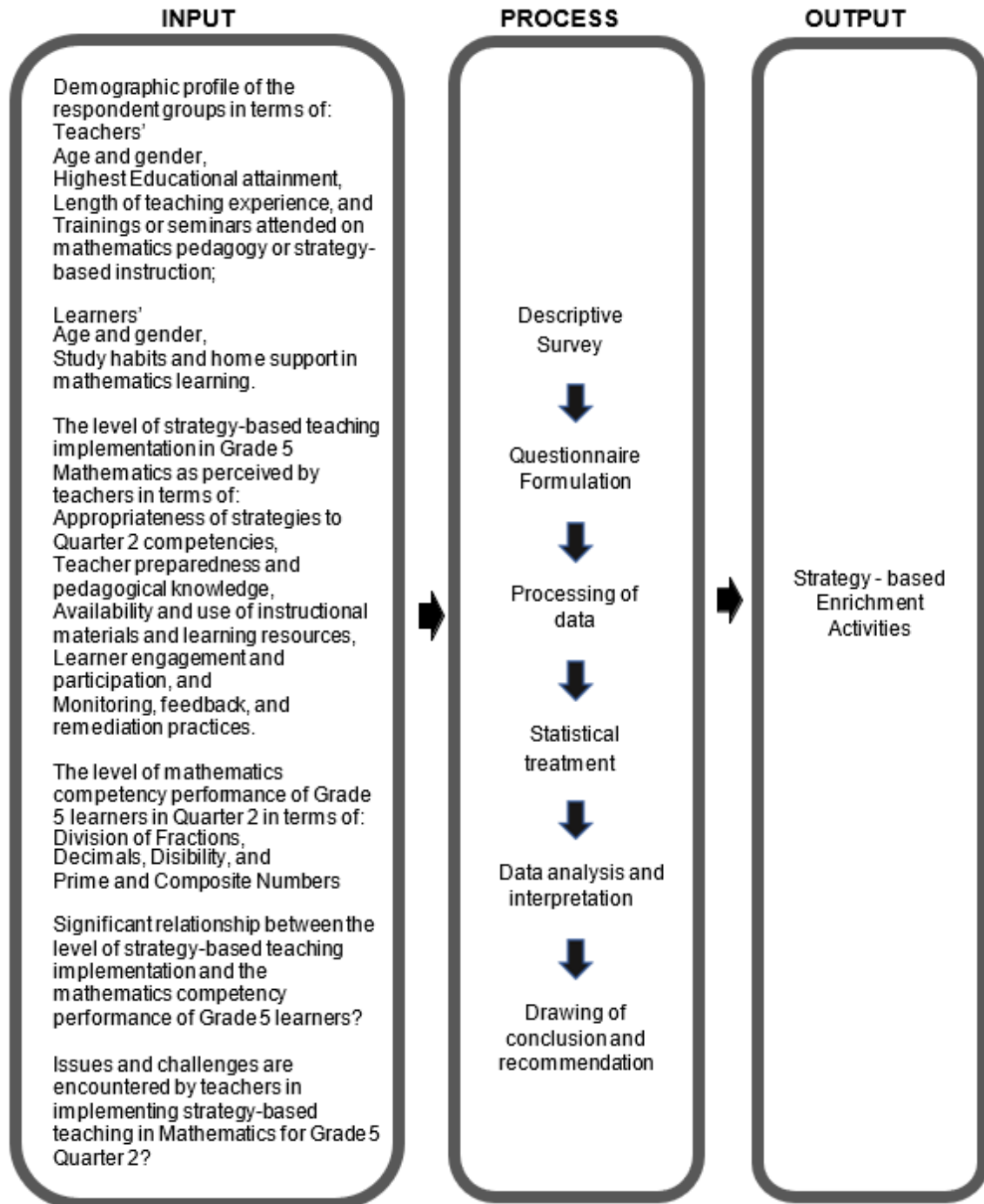
### Flow of the Study

The study adhered to a systematic methodology, commencing with the identification of the research problem, followed by a review of pertinent literature and studies to establish the theoretical and conceptual framework. Subsequently, the research instruments

(questionnaires and competency-based assessments) were developed, validated by experts, and pilot-tested to ensure reliability and clarity.

Data collection was conducted at Cabancalan II Elementary School and involved two respondent groups: Grade 5 mathematics teachers and selected Grade 5 learners. Teacher respondents accomplished

questionnaires regarding the degree of implementation of strategy-based teaching, while learners completed self-assessment checklists and took competency-based performance assessments covering Quarter 2 mathematics topics, including fractions, decimals, ratio and proportion, and real-life problem-solving.



**Figure 2 Flow of the Study**

The gathered data were encoded, organized, and statistically analyzed. Descriptive statistics such as frequency, percentage, weighted mean, and standard deviation were utilized to summarize the demographic profiles of the respondents, determine the extent of strategy-based teaching implementation, and assess learners' competency levels.

To determine whether a significant relationship existed between strategy- based teaching implementation and learners' mathematics performance, Pearson Product-Moment Correlation Coefficient (for normally distributed data) or Spearman Rank Correlation (for ordinal or non-normally distributed data) was employed. The resulting correlation values were interpreted based on standard ranges to determine whether the relationship was weak,

moderate, or strong. A 0.05 level of significance was observed in all inferential tests to determine statistical significance. Correlational statistics (Pearson's  $r$ ) will be used to assess the relationship between strategy-based instruction and learner performance.

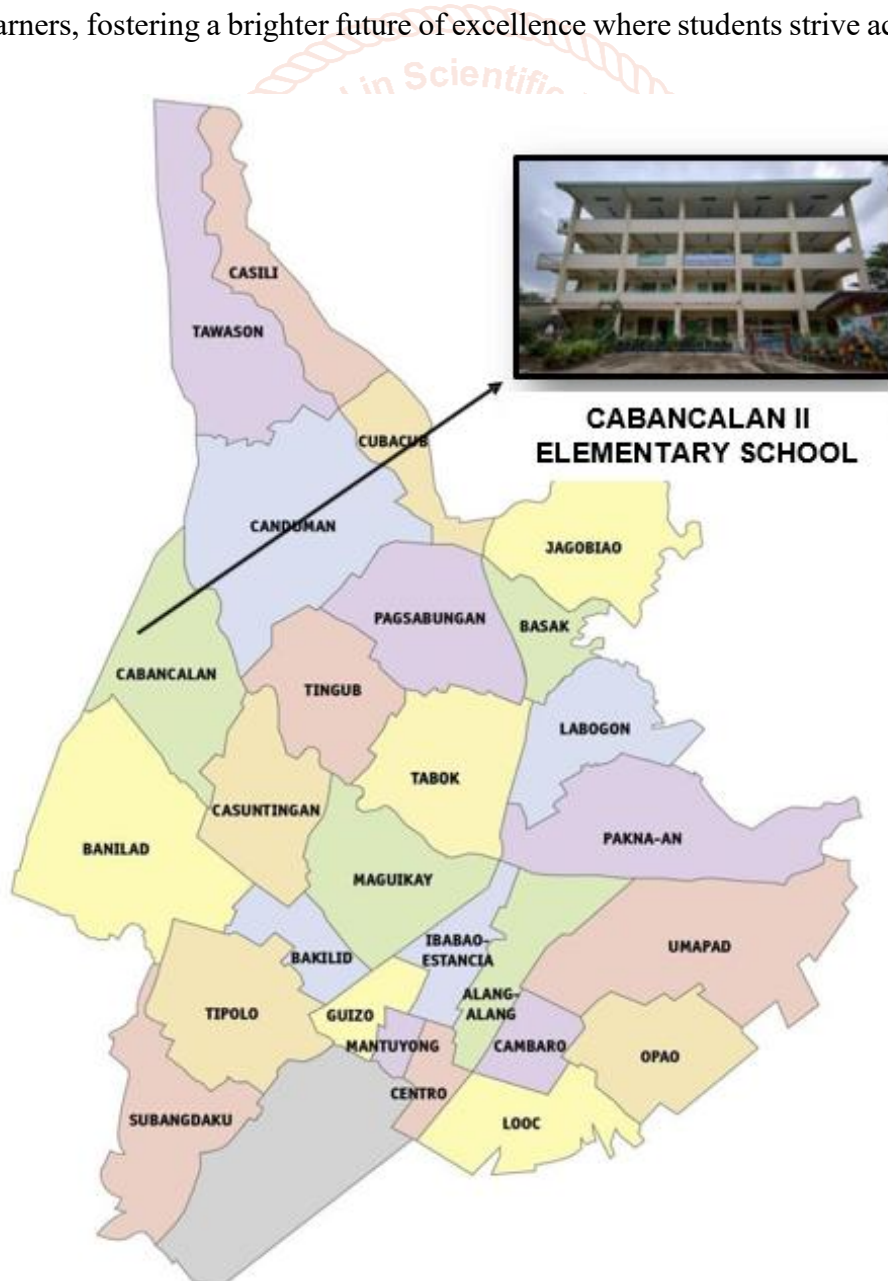
Lastly, the results will be analyzed, conclusions drawn, and recommendations formulated. The study will produce a Strategy-Based Teaching Guide for Grade 5 Mathematics as its primary output.

**Environment**

The research was conducted in Cabancalan II Elementary School, Cabancalan, Mandaue City.

Cabancalan II Elementary School is two and a half kilometers away from the city proper. It is located 100 meters away from the main road with a land area of 7,254 square meters. It was founded way back 1972. The school has a current population of 893. The school has thirty-two (32) teachers, with 1 non-teaching personnel, supervised and managed by a school head, Dr. Gina C. Bantaya. The teachers are classified according to their position: 1 Master Teacher II, 2 Master Teacher I, 17 Teacher III, 5 Teacher II and 7 Teacher I. Two Kindergarten teachers are handling 2 sessions each, 4 teachers for every grade level from Grade 1 to 6, and 4 relieving teachers. Cabancalan II Elementary School has 9 school buildings. Previously, this school operated as an extension of Cabancalan 1 Elementary School, sharing a single principal. To enhance the delivery of quality education, each school was later assigned its own principal. In line with its vision and mission to empower every student, the school places a special emphasis on literacy and numeracy skills, focusing particularly on fundamental skills. It aims to build holistic

and value-laden learners, fostering a brighter future of excellence where students strive academically, morally, and socially.



**Figure 3 Research Environment**

## Respondents

The study was conducted at Cabancalan II Elementary School, located in Mandaue City, under the Schools Division of Mandaue, Region VII. The school serves diverse elementary learners. The distribution of respondents is shown in Table 1.

**Table 1 Distribution of Respondents**

Respondents	Frequency	Percentage
Teachers	4	7.41
Learners	50	92.59
<b>Total</b>	<b>54</b>	<b>100</b>

The respondents of this study was composed of two groups:

- 1. Teachers** – All Grade 5 Mathematics teachers at Cabancalan II Elementary School were included as respondents, since they were directly involved in implementing strategy-based teaching.
- 2. Learners** – Selected Grade 5 learners enrolled in School Year 2025–2026 participated. The sampling ensured representation across different sections to capture varied learner experiences and competency levels.

A purposive sampling method was used for teacher-respondents, while stratified random sampling was applied to learner-respondents to ensure balanced participation.

## Instrument

The research utilized an adapted modified questionnaire and a competency-based mathematics assessment guided by recognized mathematics competency frameworks (Calleja, M. A., & Bernardino, A. M., 2022) on their study Mathematics learning competencies and performance of Grade 5 learners in the Philippines, in the context of mathematics learning competencies and the performance of Grade 5 learners in the Philippines. Including the Department of Education's Most Essential Learning Competencies (MELCs) for Grade 5 Mathematics. The instrument was created in accordance with DepEd guidelines and refined through insights from contemporary mathematics education research and strategy-based instructional models. Content validity was confirmed through expert evaluation, including mathematics supervisors, master teachers, and curriculum specialists.

The apparatus comprised four primary components. The initial segment compiled demographic profiles of both teachers and learners. This encompassed age, gender, highest educational qualification, teaching experience, and involvement in mathematics-related training or seminars for educators. The profile for learners included their age, gender, study habits, accessibility of learning resources at home, and their latest mathematics grades.

The second part evaluated the competency performance of Grade 5 learners in Quarter 2 mathematics, focusing on four domains: division of fractions, decimals, divisibility, and prime and composite numbers. This section comprises structured test items aligned with MELCs, intended to assess learners' mastery of concepts and skills.

The third section evaluated the methodologies used by teachers in teaching mathematics. Inquiries focused on the prevalence and efficacy of methodologies, including contextualized instruction, the use of visual aids and manipulatives, collaborative learning, differentiated pedagogy, and technological integration.

The concluding section examined the difficulties faced by both teachers and learners. Teachers faced challenges such as classroom management issues, insufficient instructional materials, and difficulties in addressing diverse learning needs. Learners faced challenges, including difficulties in comprehending abstract concepts, insufficient practice opportunities, and inconsistent levels of support at home. The instrument's structured format facilitated both quantitative analysis and qualitative insights, ensuring a comprehensive understanding of learner competencies and instructional strategies.

## Data Gathering Procedure

The data collection process commenced with the researcher obtaining authorization from the Schools Division Superintendent of Mandaue City Division via a formal request letter. Following the acquisition of requisite approval, a courtesy letter was submitted to the principal of Cabancalan II Elementary School, apprising the administration of the study's objectives and schedule.

Upon receiving clearance, the researcher collaborated with Grade 5 mathematics teachers to arrange the administration of the research instruments. The teacher questionnaire was conducted in person, allowing each respondent 20 to 30 minutes to complete the form. The researcher, aided by subject teachers, administered learner questionnaires and the competency-based mathematics test to ensure effective facilitation.

To facilitate convenience, teachers who opted for a digital response were supplied with an online version of the questionnaire. All responses were gathered within a week. After collection, the responses were verified, categorized, and submitted to a statistician for analysis. The findings were displayed in both tabular and narrative formats, aligned with the research questions and study framework.

### Statistical Treatment of Data

The study utilized both descriptive and inferential statistics to analyze the data:

**Simple Percentage.** Used to interpret the demographic profiles of teacher and learner respondents (e.g., age, gender, educational attainment, teaching experience, study habits, availability of resources).

**Weighted Mean.** Applied to determine the level of mathematics competencies of Grade 5 learners in Quarter 2 (fractions, decimals, ratio and proportion, and problem-solving) and to assess the extent of teaching strategy utilization by teachers.

**Pearson Product-Moment Correlation Coefficient.** Used to determine the relationship between the teaching strategies employed by teachers and the mathematics competency performance of learners. This helped measure the strength and direction of the relationship between instructional approaches and student learning outcomes.

**T-test.** Employed to compare differences in learners' mathematics competency performance when grouped according to profile variables such as gender, access to resources, and study habits.

### Scoring Procedures

Both questionnaires will be rated using a **4-point Likert scale**. Each response corresponds to a numerical weight, a descriptive category, and a corresponding verbal interpretation.

Scale	Range of Weighted Mean	Descriptive Category	Verbal Interpretation
4	3.26 – 4.00	Strongly Agree (SA)	The indicator is highly observed/always practiced and very effective.
3	2.51 – 3.25	Agree (A)	The indicator is observed/often practiced and generally effective.
2	1.76 – 2.50	Disagree (D)	The indicator is sometimes observed/seldom practiced and less effective.
1	1.00 – 1.75	Strongly Disagree (SD)	The indicator is not observed/never practiced and ineffective.

### DEFINITION OF TERMS

To ensure clarity, the following key terms are defined:

**Demographic Profile-** refers to the background characteristics of respondents that may influence teaching and learning.

**Highest Educational Attainment** – the academic qualifications of teachers, used to relate to their teaching strategies.

**Learners' Age and Gender** – basic characteristics of Grade 5 learners to categorize their competency performance.

**Length of Teaching Experience** – the number of years in teaching service, which may affect expertise in mathematics instruction.

**Study Habits and Home Support** – learners' study practices and parental/guardian assistance in math learning, used to examine external support factors.

**Teachers' Age and Gender** – basic information to describe respondent distribution.

**Trainings/Seminars Attended** – professional development activities in mathematics pedagogy or strategy-based instruction that may shape classroom practices.

**Strategy-Based Teaching Implementation-** refers to the extent teachers apply targeted instructional strategies to enhance Grade 5 Mathematics learning in Quarter 2.

**Appropriateness of Strategies** – alignment of methods with Quarter 2 MATATAG Curriculum and competencies.

**Instructional Materials and Learning Resources** – availability and effective use of visual aids, technology, and worksheets.

**Learner Engagement and Participation** – the degree of active involvement of learners in lessons.

**Monitoring, Feedback, and Remediation** – teacher practices in assessing learning progress and addressing difficulties.

**Teacher Preparedness and Pedagogical Knowledge** – readiness and instructional skills in executing strategies.

**Mathematics Competency Performance**- refers to the learners' ability to demonstrate mastery of Grade 5 Quarter 2 mathematics concepts.

**Composite number** is a number greater than 1 that has more than two factors. It can be divided evenly by 1, itself, and at least one more number.

**Decimals** – accuracy in solving mathematical problems involving decimal numbers.

**Divisibility**. refers to the ability of one number to be divided by another without leaving a remainder. In simple terms, a number  $A$  is divisible by number  $B$  if, when you divide  $A \div B$ , the answer is a whole number (no decimals or fractions).

**Fractions** – learners' proficiency in performing operations and applications involving fractions.

**Prime number** is a number greater than 1 that has exactly two factors: 1 and itself only.

Relationship between Strategy-Based Teaching and Learners' Competency- denotes the degree to which the implementation of teaching strategies is statistically related to learners' mathematics performance. In this study, correlation analysis is used to test significance.

**Issues and Issues**- refer to the difficulties and barriers faced by teachers in applying strategy-based instruction in Grade 5 Mathematics. These may include limited resources, time constraints, or learner readiness.

**Strategy-Based Teaching Guide**- refers to the proposed instructional material developed from the study's findings. It will provide teachers with structured, evidence-based strategies to improve mathematics competencies among Grade 5 learners at Cabancalan II Elementary School.

## 2. PRESENTATION, DATA ANALYSIS, AND INTERPRETATION

The information from the people who took part in the study called "The Effectiveness of Strategy-Based Teaching in Enhancing the Mastery of Quarter 2 Mathematics Competencies of Grade 5 Learners at Cabancalan II Elementary School, Schools Division of Mandaue City, School Year 2025–2026" is shown, analyzed, and explained in this chapter. The data were organized and processed to address the research questions in Chapter 1.

The order of the problems the study sought to solve matches the order of the results. It starts with a look at the demographics of the teacher and learner respondents. This gives us a sense of their background and how ready they are for strategy-based instruction. The next step is to evaluate how well strategy-based teaching is being used in Grade 5 Math. This includes assessing how appropriate the strategies are, how well teachers are prepared, how well instructional materials are used, how engaged students are, and how feedback or remediation is provided.

Then, the learners' math skills are evaluated based on their final test results in important subjects such as fractional division, decimal division, divisibility, and prime and composite numbers. Then, a statistical test is used to assess the significance of the relationship between the status of strategy-based teaching and learners' competency performance. Lastly, the chapter discusses the problems and issues teachers face when implementing strategy-based instruction.

The research results are clearly and thoroughly presented in this chapter through tables, figures, and descriptive analysis. These results can be meaningfully interpreted, forming the basis for the conclusions and suggestions presented in the next chapter.

### Related Information

This section provides background information on the teachers and learners who participated in the study. Understanding learners' backgrounds is crucial for interpreting the results and identifying factors that may impact the effectiveness of strategy-based teaching in math. For the teachers, the profile includes their age and gender, the highest level of education they have attained, the number of years they have been teaching, and the number of training sessions or seminars they have attended on strategy-based instruction or math pedagogy. These indicators demonstrate the teachers' qualifications, readiness to teach, and understanding of new teaching approaches.

On the other hand, the learners' demographic profile includes their age, gender, study habits, and any help they receive at home with math. It is important to understand learners' motivation, engagement, and learning environments outside of school, as these factors directly affect their performance in school. By presenting these profiles, the researcher can gain insight into the fundamental traits that may explain differences in how math is taught and how well students understand it.

### Age

Teachers' age is one of the most important demographic factors, and it has a big impact on how mature and experienced they have become over time. Because it represents the depth of their professional experience and ongoing personal growth, teachers' ages have an impact on the viewpoints and methods they apply in the classroom. Table 2 shows the age profile of the respondents.

**Table 2 Age Profile**

Indicator	Frequency	Percentage
51 – 60 years of age	1	25
41 – 50 years of age	1	25
31 – 40 years of age	2	50
<b>Total</b>	<b>4</b>	<b>100.00</b>
<b>SD</b>	<b>8.29</b>	
<b>Average</b>	<b>43.00</b>	

These are the ages of the teachers who filled out the survey (Table 2). The data show that most teachers (50%) are between the ages of 31 and 40, with 25% for the ages between 41 and 50, and 51 and 60. With an average age of 43.00 years and a standard deviation of 8.29 years, the data shows that most teachers are in their middle years of adulthood. This suggests they are professionally mature and have extensive teaching experience.

The fact that most teachers fall within the 31 -50 age range demonstrates a balance between youthful energy and seasoned knowledge, which is well-suited for adopting new methods, such as strategy-based teaching. Torres and Dela Cruz (2021) note that teachers in this age range typically have extensive knowledge of teaching and are open to new methods. This lets them effectively combine old and new teaching methods. Also, middle-aged teachers often demonstrate stability, commitment, and professional confidence, which helps maintain classroom control and keep students engaged (Bautista & Salazar, 2022).

From an institutional perspective, this age profile shows that the school has teachers who can support their younger colleagues' learning while also being open to professional growth opportunities. Nguyen et al. (2023) stress that experienced teachers are crucial for maintaining high-quality instruction and helping their peers adopt evidence-based teaching methods. The mix of ages among the respondents is well-suited to implementing strategy-based instruction in math, as it includes both experienced teachers and those willing to try new teaching approaches.

### Gender

Gender, which distinguishes respondents by whether they identify as male or female, is another essential demographic feature. Table 3 shows the gender profile of the respondents.

**Table 3 Gender**

Indicator	Frequency	Percentage
Female	4	100
<b>Total</b>	<b>4</b>	<b>100.00</b>

All twelve teachers who answered the survey (100%) are women, as shown in Table 3. This means that all 4 math teachers at Cabancalan II Elementary School who teach Grade 5 are women. This result shows that women are still more likely than men to work in basic education, especially at the elementary level, where caring, patient, and emotionally sensitive skills are highly valued in teachers.

The fact that most of the teachers are women suggests that the classroom takes a caring approach to teaching and provides ample peer support, both of which are important for keeping students interested and motivated in math. Mendoza and Rosales (2021) note that female teachers often exhibit higher levels of empathy, relational communication, and adaptability in their teaching. These are all qualities that help create a good learning environment in the classroom. In the same way, Delos Santos and Aquino (2022) noted that women teachers often use collaborative, student-centered methods that involve everyone in the class and encourage student participation. These methods are like the ideas behind strategy- based instruction.

Gender homogeneity may indicate a stable teaching culture from an institutional perspective, but it also underscores the importance of balanced representation to include diverse pedagogical perspectives and teaching styles. Gomez and Chua (2023) argue that having a mix of male and female students in schools makes students more creative and provides them with more ways to think about and solve problems. Still, the fact that this study's participants were all women suggests a strong base for caring teaching and organized classroom management, both of which help students master mathematical skills.

### Highest Educational Attainment

Another crucial factor to consider is the highest level of educational attainment, which reflects the academic achievement of teachers. Table 4 shows the respondents' highest educational attainment.

**Table 4 Highest Educational Attainment**

Indicators	Frequency	Percentage
With more than 15 units Master's Degree	4	100
<b>Total</b>	<b>4</b>	<b>100.00</b>

Table 4 illustrates the distribution of teacher respondents by their highest level of education. As you can see from the table, all four teachers (100%) have earned more than 15 units toward a master's degree. This means that all teachers have attended graduate school, indicating they are highly dedicated to professional development and lifelong learning.

The fact that many teachers have earned graduate degrees suggests that the teaching staff is highly educated and prepared to utilize specialized teaching methods, such as strategy-based instruction. Cruz and Villanueva (2021) suggest that teachers with higher levels of education are more likely to adopt new teaching approaches and utilize data-driven interventions to support student improvement. Their exposure to research-based coursework also enhances their ability to think critically and analyze, which enables them to make more informed decisions in the classroom. Furthermore, Domingo and Ramirez (2022) emphasized that teachers with higher education have greater pedagogical content knowledge and greater confidence, which enables them to teach complex subjects like mathematics with greater clarity and depth.

This educational profile has a significant impact on the quality of instruction and students' academic performance. The school has a professionally qualified teaching staff, as most teachers are graduate students or hold degrees. They can plan enrichment activities and adjust their teaching to meet the needs of their students. Lopez et al. (2023) state that ongoing professional development is directly linked to better student performance and more effective teaching. So, teachers' desire to attend college positively affects the successful implementation of strategy-based mathematics instruction, creating an environment where students are academically challenged and professionals are at the top of their game.

### Length of Teaching Experience

Another consideration was the number of years of service. It served as the foundation for their devotion to the workplace they are currently affiliated with. The number of years of service is shown in Table 5.

Table 5 presents the respondents' experiences with teaching. One of the four teachers (25%) have been teaching for 11 to 20 years. Majority of the teachers (75%) have been teaching for 21 to 30 years. The calculated average length of service is 23.00 years, with a standard deviation of 4.33 years. This means that most of the teachers who answered the survey are in the middle of their careers, have extensive teaching experience, and know how to teach the curriculum.

**Table 5 Length of Teaching Experience**

Indicator	Frequency	Percentage
21-30 years	3	75.00
11-20 years	1	25.00
<b>Total</b>	<b>4</b>	<b>100.00</b>
<b>SD</b>	<b>4.33</b>	
<b>Average</b>	<b>23.00</b>	

This result suggests that the respondents have sufficient experience working with students of varying skill levels and employing a range of teaching methods. Delacruz and Bautista (2021) argue that teachers with more than 10 years of experience are better equipped to manage the classroom, implement the curriculum, and differentiate instruction, as they possess more real-world experience. Furthermore, Santos and Villarín (2022) emphasized that more experienced teachers are more self-aware and can effectively assess the effectiveness of their teaching

methods, adjusting them to improve student performance. This fits well with the study's focus on strategy-based teaching, which needs both knowledge of how to teach and the ability to make decisions based on experience. This profile means two different things. The first thing it means is a teaching workforce that is both stable and flexible, able to help new teachers learn and maintain good teaching practices. Additionally, it suggests that teachers' extensive experience is a valuable base for introducing new methods into the teaching of mathematics. As Yap and Hernandez (2023) noted, service length is often linked to instructional maturity and professional confidence. Both things make it easier to use learner-centered approaches effectively. Respondents' experience as teachers positively affects the success of strategy-based instruction, enabling students to master mathematical skills more effectively.

### Trainings or seminars attended on mathematics pedagogy or strategy-based instruction

Teachers' attendance at seminars, training sessions, and workshops is another essential demographic factor to evaluate. The improvement of teachers' abilities and expertise depends primarily on this professional development. Table 6 presents the training or seminars attended on mathematics pedagogy or strategy-based instruction.

**Table 6 Trainings or seminars attended on mathematics pedagogy or strategy- based instruction**

Indicators	Frequency	Percentage
30-39 hours	3	75.00
20-29 hours	1	25.00
<b>Total</b>	<b>4</b>	<b>100.00</b>

In Table 6, you can see how much training or seminar attendance teachers in mathematics pedagogy and strategy-based instruction had. The numbers show that 75% of teachers attended professional development events lasting 30 to 39 hours, while 25% attended events lasting 20 to 29 hours. This distribution shows that while many teachers have completed extensive professional development, many still have not had many opportunities to attend long, in-depth training sessions on strategy-based instruction.

The results show that most teachers have a basic understanding of new teaching approaches. However, they may still need ongoing training to improve their skills and ensure they consistently use strategy-based teaching in Math. According to Reyes and Alonzo (2021), the number of hours teachers spend on professional development significantly affects how well they teach and how well their students learn. Lazaro and Dizon (2022) also found that teachers who receive more structured, longer-lasting training are more confident and skilled when using learner-centered strategies and assessment tools together.

This finding affects both how we teach and how institutions operate. It is recommended that schools offer teachers long-term, hands-on training programs that focus on new ways to teach math and effective teaching methods. Garcia et al. (2023) state that professional development has the most significant impact when the training length allows for active participation, reflection, and mentoring after the training. Therefore, although current data show that teachers are actively participating in professional learning, they need to maintain and improve their skills to continue using a practical, strategy-based methodology to teach mathematics.

### Learners

This section provides information on the Grade 5 students who participated in the study, including their demographics. Their age and gender, as well as how they study and get help with math at home, are all considered. These factors provide important information about students' developmental stage, their learning style, and the support they receive from their families. All of these factors affect how well they perform in school and how effectively they respond to strategy- based instruction.

### Age

Age refers to the number of years a learner has lived since birth and influences their level of maturity, cognitive development, and readiness to learn mathematical concepts. Table 7 shows the age of the learners.

**Table 7 Age Profile**

Indicator	Frequency	Percentage
11-12 years of age	24	48
9-10 years of age	26	52
<b>Total</b>	<b>50</b>	<b>100.00</b>
<b>SD</b>	<b>0.87</b>	
<b>Average</b>	<b>10.25</b>	

Table 7 illustrates the distribution of Grade 5 students who responded to the survey by age. As you can see, most of the students, 26 (52%), are between the ages of 9 and 10, while 24 (48%) are between the ages of 11 and 12. Based on an average age of 10.25 years and a standard deviation of 0.87 years, most students are within the appropriate age range for Grade 5, as set by the Department of Education (DepEd) under the K–12 curriculum standards. This distribution shows a population that is mostly the right age, which is excellent for meeting academic and developmental goals for intermediate learners.

Most students are between 9 and 10 years old, suggesting they are in late childhood, a stage marked by better logical reasoning, problem-solving skills, and greater independence in learning. Flores and Santos (2021) note that students at this stage begin to shift from concrete to abstract thinking. This helps them better understand math concepts, especially those involving operations, fractions, and divisibility. Additionally, Cruz and Lim (2022) suggest that students of the right age tend to be more cognitively flexible and socially cooperative, which makes them more interested in collaborating and employing strategies in the classroom.

The results show that students of different ages can benefit from strategy- based math instruction because they are ready to take part in hands-on, problem- based activities. Additionally, having students of the same age levels makes it easier to differentiate instruction, allowing teachers to focus on improving mastery rather than filling in learning gaps caused by age differences. Villanueva and Dela Peña (2023) found that when students' ages align with expectations for their grade, it leads to better learning outcomes, greater participation, and a more positive attitude toward math.

### Gender

This pertains to the biological distinction between male and female learners. It is considered an important demographic variable as it may influence learning preferences, classroom participation, and achievement in Mathematics. Table 8 shows the results for gender.

**Table 8 Gender**

Indicator	Frequency	Percentage
Female	29	58.00
Male	21	42.00
<b>Total</b>	<b>50</b>	<b>100.00</b>

Table 8 shows how the Grade 5 students who responded to the survey were split by gender. The numbers show that 29 of the learners are women (58%), while only 21 are men (42%). This indicates that many female learners are in the group, suggesting that girls comprise the majority of the study's participants. This pattern of distribution is similar to what is observed in many public elementary schools, where girls' enrollment rates are slightly higher than those of boys, as they tend to stay in school longer and take more classes.

There may be problems with using strategy-based teaching in math because of the imbalance between men and women. Ramos and Castillo (2021) say that female students are more likely to be diligent, focused, and follow through with their learning tasks. This can help them be more involved in classroom activities. Lim and Arriola (2022) also noted that girls are more likely to be persistent and self-controlled when learning math, both of which are important skills for mastering problem-solving. However, the lack of male learners shows that we need more gender-sensitive teaching methods that engage boys, motivate them, and involve them in the subject.

From a teaching perspective, teachers need to consider how gender affects relationships when using strategy-based lessons, ensuring that everyone has an equal opportunity to learn. Tan and Velasco (2023) said that differentiating lessons with a variety of activities, real-life situations, and game-like elements helps keep the interest of both male and female learners. Although most people in this group are women, who may be highly involved in school, equal attention must be paid to both sexes to make math lessons more effective and help students grow in all areas.

### Study habits

This refers to the learners' consistent patterns, attitudes, and strategies in managing their study time, completing assignments, and preparing for assessments in Mathematics. Time spent studying Mathematics weekly. Table 9 presents the study habits of learners.

In Table 9, you can see how the learner respondents are spread out based on how many hours a day they spend studying math. The data show that 23 learners (46% of the total) study for 1 to 2 hours per day, followed by 21 learners (42% of the total) who study for 3 to 4 hours. Only six learners (12%) spend 5 hours or more on activities related to learning mathematics. The average time spent studying (3 hours) and the standard deviation

(1.54) indicate that most learners are only moderately interested in their studies. This is a good but not great commitment to academic practice outside of school.

**Table 9 Study Habits**

Indicator	Frequency	Percentage
5 hours or more	6	12.00
3-4 hours	21	42.00
1-2 hours	23	46.00
<b>Total</b>	<b>50</b>	<b>100.00</b>
<b>Average</b>	<b>3.00</b>	
<b>SD</b>	<b>1.54</b>	

This means that even though students usually set aside time to study on their own, that time may not be enough to make sure they fully understand complex mathematical ideas. According to Reyes and Gutierrez (2021), studying consistently and with focus improves understanding, retention, and problem-solving skills, especially in subjects like math that require understanding of how things work. Del Mundo and Santos (2022) also said that learners who follow structured study routines do better on final exams because they are more self-disciplined and their ideas are reinforced.

The results also demonstrate the importance of involving parents and teachers in helping children develop better study habits. Strategy-based teaching can be paired with activities such as online drills, peer study sessions, or practice exercises to help learners allocate more time to studying. Garcia and Villareal (2023) stated that teaching students to manage their time and engage in self-regulated learning can help them develop better study habits and stay motivated over time. Even though learners' current study habits are fine, they need to increase the quantity and quality of their study time to master Math concepts and continue improving in school.

### Home support in Mathematics learning

This refers to the assistance, encouragement, and resources provided by parents or guardians to help learners engage effectively in Mathematics activities. This includes supervision of homework, providing learning materials, and fostering a positive attitude toward the subject. Strong home support enhances learners' motivation and confidence, complementing classroom instruction and reinforcing strategy-based teaching.

**Table 10 Home Support in Mathematics Learning**

Indicator	Frequency	Percentage
Parents / Guardians	15	30
Siblings	12	24
Relatives	10	20
Friends	13	26
<b>Total</b>	<b>50</b>	<b>100.00</b>

Figure 10 illustrates the distribution of learners who responded to the survey by the types of home math help they receive. The data show that 15 learners (30%) get help with their schoolwork from their parents or guardians, 13 learners (26%) from friends, 12 learners (24%) from their siblings, and 10 learners (20%) from relatives. Even though many people help learners learn at home, this distribution shows that peer and sibling support are the most common ways learners get help with math.

The results indicate that learners' close friends and family, particularly siblings and peers, have a significant impact on their academic performance. Santiago and Dela Cruz (2021) argue that peer- and sibling-supported learning encourages collaboration, improves problem-solving skills, and builds understanding through shared experiences. However, the relatively low rate of parental involvement (24%) suggests a need for greater direct involvement in math education. Rivera and Gonzales (2022) suggest that parental involvement in school activities significantly enhances a student's confidence and motivation, particularly in subjects perceived as challenging, such as math.

These results clearly indicate that partnerships between families and schools need to be strengthened to enhance home-based learning support. While having siblings and friends involved is beneficial, consistent parental guidance remains the most crucial factor in developing study habits and academic resilience. Villareal et al. (2023) say that structured home learning activities can help teachers and parents communicate more effectively, close instructional gaps, and keep students making progress. Because of this, schools should encourage parents and guardians to be more involved in their kids' learning by offering programs that build parents' skills,

providing practice materials they can use at home, and creating opportunities for parents and guardians to talk with teachers.

### Strategy-Based Mathematics Teaching Implementation in Grade 5

This section presents the assessment of the status of strategy-based teaching implementation among Grade 5 teachers. The analysis focuses on five key areas that reflect the overall effectiveness and consistency of instructional practices—appropriateness of strategies, teacher preparedness and pedagogical knowledge, availability and use of instructional materials and learning resources, learner engagement and participation, and monitoring, feedback, and remediation practices. These dimensions collectively determine how effectively teachers implement strategy-based instruction to promote learners' understanding and mastery of mathematical concepts.

#### Appropriateness of Strategies

Appropriateness of Strategies is the alignment of methods with Quarter 2 MELCs and competencies. This also refers to the suitability and alignment of teaching methods and techniques used by teachers with learners' needs, learning styles, and the objectives of the mathematics curriculum (Torres & Dela Cruz, 2021). Table 11 shows the results on the appropriateness of strategies.

Table 11 presents the respondents' views on the strategies used to teach math to 5th graders. The data show that "Strongly Agree" is the most common response, with an average weighted mean of 3.83 and a standard deviation of 0.29. This result indicates that teachers consistently employ appropriate and responsive strategies aligned with the learning goals established for Mathematics. These results demonstrate that teachers are highly dedicated to ensuring that their teaching methods meet the needs of all their students and help them master essential skills.

**Table 11 Appropriateness of Strategies**

Indicators	WM	SD	Interpretation
I align teaching strategies with the specific Grade 5 Quarter 2 math competencies.	3.75	0.43	Strongly Agree
I modify strategies depending on the difficulty level of the competency.	3.75	0.43	Strongly Agree
I use strategies that allow learners to connect prior knowledge to new concepts.	3.75	0.43	Strongly Agree
My strategies cater to both fast and slow learners in the class.	4.00	0.00	Strongly Agree
I ensure that strategies promote both procedural fluency and conceptual understanding.	3.75	0.43	Strongly Agree
I incorporate real-life examples to make strategies competency-based.	4.00	0.00	Strongly Agree
<b>Average Weighted Mean</b>	<b>3.83</b>	<b>0.29</b>	<b>Strongly Agree</b>

#### Legend:

3.26-4.00 Strongly Agree 1.76-2.50 Disagree  
2.51-3.25 Agree 1.00-1.875 Strongly Disagree

It is a tie between two statements that have the highest weighted mean (4.00): "My strategies work for both fast and slow learners in the class" and "I use real-life examples to make my strategies competency-based." These suggest that teachers intentionally tailor their lessons to meet each learner's needs and help them connect math concepts to real-life situations. Tan and Velasco (2023) say that contextualized teaching promotes learner engagement by making math more meaningful and easier for learners of all skill levels to understand. Differentiation, on the other hand, supports fair learning opportunities by accounting for different learning styles and speeds (Garcia & Villareal, 2021).

However, the lowest weighted mean (3.75), still considered "Strongly Agree," is observed across four indicators. This is especially true when it comes to matching strategies to specific competencies, adapting approaches to difficulty, encouraging conceptual understanding, and making connections between new and old concepts. This means that, even though teachers do a good job of aligning their lessons, they could still improve their adaptive and competency-based planning to help students learn more deeply. Reyes and Alonzo (2021) emphasize the importance of continuing to reflect and grow professionally to choose the most effective strategy for targeting higher-order mathematical skills.

The overall results show that the people who answered are very good at planning and carrying out strategy-based lessons that balance understanding of how things work and how they work together. The DepEd's MATATAG plan, which stresses learner-centered, contextually grounded, and inclusive instruction, is supported by this high

level of alignment. To maintain and enhance teachers' ability to select and use appropriate, evidence-based strategies in math, they should continue their professional development through ongoing professional enrichment programs, classroom observations, and collaborative lesson planning.

### Teacher Preparedness and Pedagogical Knowledge

Teacher Preparedness and Pedagogical Knowledge refers to the readiness and instructional skills required to execute strategies. Denotes the teacher's level of readiness, professional competence, and mastery of content and pedagogy necessary to effectively plan and deliver Mathematics instruction (Domingo & Ramirez, 2022). Table 12 presents the teacher preparedness and pedagogical knowledge.

Table 12 shows how the respondents felt about their readiness and knowledge of how to teach mathematics using a strategy-based approach. The average weighted mean score was 3.80, with a standard deviation of 0.22, which means that most people strongly agreed. This means that Grade 5 Math teachers are well-prepared and skilled at planning, implementing, and reviewing their lessons. This means that teachers have all the skills and pedagogical knowledge needed to implement learner-centered, competency-based instruction effectively.

**Table 12 Teacher Preparedness and Pedagogical Knowledge**

Indicators	WM	SD	Interpretation
I prepare lesson plans with clear strategy integration for each competency.	4.00	0.00	Strongly Agree
I feel confident in using multiple strategies to teach math concepts.	4.00	0.00	Strongly Agree
I update my teaching strategies based on training and seminars.	3.75	0.43	Strongly Agree
I assess the suitability of strategies before applying them in class.	3.75	0.43	Strongly Agree
I adapt strategies when learners have difficulty mastering competencies.	4.00	0.00	Strongly Agree
I reflect and evaluate my own teaching strategies regularly.	3.25	0.43	Agree
<b>Average</b>	<b>3.80</b>	<b>0.22</b>	<b>Strongly Agree</b>

Three indicators score the highest: "I feel confident using multiple strategies to teach math concepts," "I prepare lesson plans with clear strategy integration for each competency," and "I adapt strategies when learners have difficulty mastering competencies." These three indicators average 4.00 out of 5. These results indicate that teachers are highly confident, utilize a range of teaching methods, and design lessons that directly align with learning outcomes. Domingo and Ramirez (2022) argue that teachers with greater pedagogical preparedness can better align lesson design with students' actual performance in school. This makes sure that lessons are both valuable and practical. Nguyen et al. (2023) also note that reflective, adaptive teachers can adjust their teaching methods in real time, which is crucial for meeting the needs of all students and keeping them engaged.

With a mean score of 3.25, "I regularly think about and evaluate my own teaching methods" is the least important indicator. Even though it falls under "Agree", it suggests that some respondents may not be practicing self-reflection as much as they could be. This finding shows that professional reflection and peer collaboration need improvement to help people keep getting better. Lopez et al. (2023) suggest that reflective practice enables teachers to assess the effectiveness of their strategies and make informed adjustments based on evidence, ultimately enhancing the classroom's effectiveness.

Furthermore, the results show that teachers are highly prepared and skilled in their teaching, enabling them to use strategy-based instruction effectively in Mathematics. To improve and develop new ways to teach, it is suggested that teachers continue learning through mentoring, lesson study, and reflective discussions. Strengthening these areas will not only improve the quality of instruction but will also help students master math skills more consistently.

### Availability and Use of Instructional Materials and Learning Resources

Instructional Materials and Learning Resources availability and effective use of visual aids, technology, and worksheets. Pertains to the accessibility and effective utilization of print, digital, and manipulative learning materials that support the teaching and learning process in Mathematics (Garcia et al., 2023). Table 13 depicts on the Availability and Use of Instructional Materials and Learning Resources.

Table 13 illustrates respondents' perceptions of the availability and use of teaching materials and other learning resources for mathematics. The average weighted mean is 3.75, and the standard deviation is 0.37. This means that most people "Strongly Agree." This means that math teachers in grade 5 always use a variety of learning tools that enhance strategy-based teaching. The results show that not only are teaching materials available, but they are also used well in lessons to help students understand concepts and stay interested.

**Table 13 Availability and Use of Instructional Materials and Learning Resources**

Indicators	WM	SD	Interpretation
I develop or adapt instructional materials that support strategy-based teaching.	3.75	0.43	Strongly Agree
I integrate visual aids and manipulatives to strengthen learners' understanding.	4.00	0.00	Strongly Agree
I use ICT tools (videos, apps, simulations) in teaching math.	3.75	0.43	Strongly Agree
Materials are available and sufficient for group/individual work.	3.75	0.43	Strongly Agree
I use supplementary worksheets aligned with competencies.	3.75	0.43	Strongly Agree
I encourage learners to create their own math learning tools.	3.50	0.50	Strongly Agree
<b>Average</b>	<b>3.75</b>	<b>0.37</b>	<b>Strongly Agree</b>

"I use visual aids and manipulatives to help students understand" received the highest score (WM = 4.00) among the indicators. This demonstrates the teachers' dedication to utilizing visual and hands-on tools that make abstract mathematical concepts more tangible and understandable. As Garcia et al. (2023) noted, the use of visual and manipulative materials helps students understand concepts and supports differentiated learning, particularly in math-based subjects. Adding these kinds of tools fits with DepEd's push for learning that is more relevant and hands-on.

The indicator with the lowest score (WM = 3.50) is "I encourage students to make their own math learning tools." Although it was still rated "Strongly Agree," the results indicate that teachers are very resourceful; however, learner-generated materials may not yet be fully utilized. Encouraging students to create their own teaching materials can help them become more creative, take responsibility, and think critically, all of which are essential skills for learning in the 21st century (Reyes & Alonzo, 2021).

Given the high overall mean, teachers are effectively utilizing both traditional and modern resources, such as ICT tools, supplementary worksheets, and manipulatives, to support competency-based instruction. This finding aligns with Lazaro and Dizon's (2022) finding that access to a variety of helpful learning materials directly increases students' interest in learning and improves their school performance. To keep this strength going, schools should keep giving teachers the right tools and training to make digital resources, so that lessons stay flexible, interactive, and open to everyone.

### Learner Engagement and Participation

Learner Engagement and Participation the degree of active involvement of learners in lessons. Referring to the degree of learners' active involvement, motivation, and interaction during Mathematics activities and discussions, which enhance comprehension and retention (Tan & Velasco, 2023). Table 14 shows the learners engagement and participation.

**Table 14 Learner Engagement and Participation**

Indicators	WM	SD	Interpretation
My strategies promote active learner involvement in solving problems.	3.75	0.43	Strongly Agree
I encourage learners to explain their answers and reasoning.	3.75	0.43	Strongly Agree
I use group strategies that build teamwork and peer learning.	3.50	0.50	Strongly Agree
My strategies motivate learners to ask questions and clarify concepts.	4.00	0.00	Strongly Agree
I ensure participation of struggling learners through scaffolding.	4.00	0.00	Strongly Agree
Learners are excited and motivated when I use strategy-based teaching.	3.75	0.43	Strongly Agree
<b>Average</b>	<b>3.79</b>	<b>0.30</b>	<b>Strongly Agree</b>

Table 14 shows how the teachers felt about learners' engagement and involvement in strategy-based math instruction. The average weighted mean score was 3.79, and the standard deviation was 0.30. This means that most people "Strongly Agree." These results show that students are usually very interested and involved in Math classes that use strategy-based approaches. According to the data, teachers do a good job of making classrooms that are interactive, motivating, and open to participation. This helps students learn how to think critically and work together.

With a weighted mean of 4.00, "My strategies encourage learners to ask questions and clarify concepts" and "I make sure that struggling learners can participate through scaffolding" are the best indicators. These results show that teachers are trying to make math lessons more open, interactive, and focused on questions. Tan and Velasco (2023) argue that learner-centered strategies that encourage asking questions, seeking answers, and talking with other students can help students understand and feel confident in math. Cruz and Lim (2022) also noted that

scaffolding helps students of varying math skills participate meaningfully, making them feel they belong and reducing their math anxiety.

"I use group strategies that build teamwork and peer learning" got the lowest score (WM = 3.50). It was still rated "Strongly Agree," which means that teachers encourage learners to work together to learn, but there may be ways to improve group problem-solving and cooperation. Villareal et al. (2023) note that working together as a team improves social learning and helps learners internalize mathematical reasoning through group discussion and peer modeling.

Overall, the results show that teachers in Grade 5 use strategy-based lessons well, which encourages learners to be curious, motivated, and involved. The high levels of engagement show that the classroom is a good place to learn and grow in all areas. To keep this trend moving in a positive direction, it is suggested that cooperative learning structures, formative questioning techniques, and differentiated scaffolding be used repeatedly. These strategies ensure that all students, regardless of ability level, stay interested and involved in math class.

### Monitoring, Feedback, and Remediation Practices

Monitoring, Feedback, and Remediation – teacher practices in assessing learning progress and addressing difficulties. Involves the systematic assessment of learner performance, timely provision of feedback, and implementation of corrective or enrichment activities to address learning gaps (Reyes & Alonzo, 2021). Table 15 presents the monitoring, feedback and remediation practices.

**Table 15 Monitoring, Feedback, and Remediation Practices**

Indicators	WM	SD	Interpretation
I provide immediate feedback after learners apply strategies.	3.50	0.50	Strongly Agree
I monitor learners' progress through formative assessment.	3.75	0.43	Strongly Agree
I adjust strategies based on learners' performance results.	3.75	0.43	Strongly Agree
I conduct remediation activities aligned with competencies.	4.00	0.00	Strongly Agree
I use alternative assessments to capture learners' growth.	4.00	0.00	Strongly Agree
I collaborate with parents for additional support at home.	3.75	0.43	Strongly Agree
<b>Average</b>	<b>3.79</b>	<b>0.30</b>	<b>Strongly Agree</b>

Table 15 shows how the respondents thought they did with monitoring, giving feedback, and helping learners fix their mistakes during strategy-based math instruction. The average weighted mean is 3.79, and the standard deviation is 0.30. This means that most people "Strongly Agree." This means that teachers always use effective monitoring and feedback systems to track their learners' progress, support them when needed, and help those who are struggling to learn. These actions demonstrate a proactive, responsive approach to ensuring that all students master the competencies being taught.

"I do remediation activities that are aligned with competencies" and "I use alternative assessments to capture learners' growth" got the highest scores (a weighted mean of 4.00). Based on these results, teachers should focus on competency-based remediation and use a variety of assessment tools to check on learners' progress. Reyes and Alonzo (2021) say that using a variety of assessment methods helps teachers accurately find learning gaps and offer individualized interventions that encourage ongoing improvement. In the same way, Lazaro and Dizon (2022) stated that competency-based remediation helps students retain information and feel more confident, especially in math, where understanding concepts requires extensive practice and feedback.

The indicator with the lowest score (WM = 3.50) is "I give learners immediate feedback after they use strategies." This result suggests that feedback may not always be immediate or long-lasting due to time constraints or large class sizes, even though it is still interpreted as "Strongly Agree." Garcia et al. (2023) noted that timely feedback is one of the most important factors affecting student achievement because it helps students clear up any confusion, reflect on their learning, and make changes right away.

Overall, the results show that teachers do a good job of monitoring and providing feedback, ensuring that learners' learning is continually assessed and improved. Formative tests, homework help, and working together at home are regular parts of a comprehensive instructional approach that encourages learner growth and responsibility. To make this even stronger, teachers may use digital formative tools and peer-assessment activities to provide learners with feedback more quickly and to encourage collaboration. This aligns with modern principles of learner-centered, data-driven instruction.

## Summary of Results

Table 16 shows the results on the status of strategy-based Mathematics teaching implementation in Grade 5, such as Appropriateness of strategies, Teacher preparedness and pedagogical knowledge, Availability and use of instructional materials and learning resources, Learner engagement and participation, and Monitoring, feedback, and remediation practices.

**Table 16 Summary of Results**

Indicators	WM	SD	Interpretation
Appropriateness of strategies	3.83	0.29	Strongly Agree
Teacher preparedness and pedagogical knowledge	3.80	0.22	Strongly Agree
Availability and use of instructional materials and learning resources	3.75	0.37	Strongly Agree
Learner engagement and participation	3.79	0.30	Strongly Agree
Monitoring, feedback, and remediation practices.	3.79	0.30	Strongly Agree
<b>Average</b>	<b>3.79</b>	<b>0.30</b>	<b>Strongly Agree</b>

The information in Table 16 shows the current state of implementing strategy-based math teaching in five main areas. Overall, the results show a weighted mean of 3.79 with a standard deviation of 0.30, which means that most people "Strongly Agree." In other words, it means that Grade 5 Math teachers consistently demonstrate a high level of skill and dedication in using strategy-based instruction. They make sure their lessons are well-planned, engaging, well-supported with resources, and continually checked for improvement.

"Appropriateness of Strategies" got the most votes, with a mean score of 3.83. This shows that teachers are very good at choosing and using teaching methods that align with students' needs and target their learning competencies. Reyes and Alonzo (2021) argue that instructional appropriateness is a key factor in how well learners learn, as strategies tailored to learners' situations and cognitive levels help them better understand and remember math concepts.

On the other hand, "Availability and Use of Instructional Materials and Learning Resources," which got a mean score of 3.75, was rated the lowest. Even though it was still rated "Strongly Agree," this suggests there may be problems with having enough materials or accessing new teaching materials. Lazaro and Dizon (2022) said that teaching materials are essential for helping learners understand concepts. They also said that not having enough or new resources can make it harder for students to learn in different ways and through hands-on activities.

Overall, the results show that teachers at Cabancalan II Elementary School do a good job of using strategy-based instruction in math. They use the right strategies, show that they are prepared to teach, keep learners interested, and keep progress going by monitoring and correcting work. The results align with DepEd's MATATAG plan, which emphasizes learner-centered, competency-based teaching. To maintain this high level of implementation, teachers should continue learning new skills, have access to creative teaching materials, and work with their peers. Tan and Velasco (2023) stated that ongoing capacity building ensures that teachers remain flexible, resourceful, and self-reflective, enabling them to continue using strategy-based instruction to teach math effectively.

## Mathematics Competency Performance Based

This part shows and discusses how well students performed on the identified Grade 5 Quarter 2 math competencies: dividing fractions, solving decimals, finding the smallest number that divides another fraction or decimal, and finding the most significant number that divides another prime number. Because the performance outcomes are numbers that show how well learners understood important math ideas and skills, they show how well strategy-based instruction worked.

### Division of Fractions

This refers to the mathematical process of finding how many times one fraction is contained in another, involving the use of reciprocal and multiplication rules to solve real-world and numerical problems. Table 17 shows the results of division of fractions.

The learners' level of skill in dividing fractions is shown in Table 17. The average weighted mean is 3.25, and the standard deviation is 0.42, which means that most people "Agree." This means that learners have a good understanding of the concepts and steps involved in fraction division, but they still require additional practice to fully master the subject. The results suggest that, although learners can follow the steps for dividing fractions, some may still struggle to understand the concept and apply the process consistently when solving problems.

**Table 17 Division of Fractions**

Indicators	WM	SD	Interpretation
I understand why dividing by a fraction means multiplying by its reciprocal (Keep-Change-Flip).	3.24	0.43	Agree
I can divide fractions with ease using the correct steps.	3.12	0.34	Agree
I can solve word problems that involve dividing fractions.	3.12	0.34	Agree
I use visual models (like drawings or fraction bars) to understand division of fractions.	3.25	0.42	Agree
I feel confident answering fraction division problems without help.	3.25	0.45	Agree
I can explain my solution when dividing fractions to my classmates or teacher.	3.53	0.54	Strongly Agree
<b>Average Weighted Mean</b>	<b>3.25</b>	<b>0.42</b>	<b>Agree</b>

**Legend:**

3.26-4.00 Strongly Agree 1.76-2.50 Disagree

2.51-3.25 Agree 1.00-1.875 Strongly Disagree

The best indicator is "I can explain my answer to my teacher or classmates when dividing fractions," which has a weighted mean of 3.53. This result shows that many learners can explain their thinking and show that they understand how things work. This is a good sign for strategy-based teaching that focuses on conceptual explanation and peer discussion. Domingo and Ramirez (2022) argue that allowing students to discuss their mathematical reasoning improves cognitive processing and fosters a deeper understanding of the big ideas.

However, the lowest scores-"I can easily divide fractions using the right steps" and "I can solve word problems that involve dividing fractions" (both WM = 3.12)-show that both procedural fluency and real-world application still need work. This aligns with Flores and Santos (2021) findings about how difficult it is for students to apply what they know about algorithms to real-world problem-solving situations.

Overall, the results show that learners know how to divide fractions, but they need ongoing supervised practice, visual aids, and real-life problems to improve their understanding. To ensure students develop both conceptual and procedural fluency, teachers should continue using strategy-based methods such as visual fraction models, step-by-step scaffolding, and real-life problem-solving tasks (Reyes & Gutierrez, 2021).

**Decimals**

Decimal are numerical expressions that represent parts of a whole using a base-ten system, allowing precise computation and comparison of values in measurement, money, and other applications. Table 18 presents the results for decimals.

**Table 18 Decimals**

Indicators	WM	SD	Interpretation
I can read and write decimal numbers up to hundredths/thousandths.	3.85	0.54	Strongly Agree
I can compare and order decimals correctly.	3.75	0.45	Strongly Agree
I can add, subtract, multiply, and divide decimals accurately.	3.50	0.50	Strongly Agree
I can change fractions into decimals (and decimals into fractions).	3.50	0.50	Strongly Agree
I can solve word problems involving money and decimals.	3.25	0.33	Agree
I understand decimals better when connected to real-life situations (e.g., money, measurements).	3.43	0.42	Strongly Agree
<b>Average Weighted Mean</b>	<b>3.55</b>	<b>0.46</b>	<b>Strongly Agree</b>

In Table 18, you can see how well the learners can use decimals. "Strongly Agree" is what the average weighted mean of 3.55 with a standard deviation of 0.46 means. The results show that learners in Grade 5 are very proficient in understanding, computing, and applying decimals in both school and real-life contexts. The outcomes suggest that learners are confident in their ability to do basic operations with decimals and show that they are ready for more advanced mathematical ideas that require manipulating and using decimals.

With a weighted mean score of 3.85, "I can read and write decimal numbers up to hundredths/thousandths" is the best indicator. These results show that learners have a good grasp of place value and can correctly read and write decimal numbers. Cruz and Lim (2022) say that knowing how to use decimals is the basis for doing calculations correctly and understanding what they mean, especially when it comes to money and measurements.

A weighted mean of 3.25 gives the indicator "I can solve word problems involving money and decimals" the lowest score. Some learners had trouble applying their computational skills to real-world problem situations, even though the answer was "Agree." Learners often perform better on procedural tasks than on application-based problems, as Reyes and Gutierrez (2021) noted. This suggests a gap between knowing about ideas and being able to solve real-life problems.

Overall, the results show that learners have a good understanding of decimal operations and concepts. However, they would benefit from more problem-based, context-specific learning activities to improve their ability to apply what they have learned in real-world settings. Domingo and Ramirez (2022) argue that incorporating budgeting, shopping, and measurement tasks from everyday life into math lessons is a powerful way to bridge the gap between abstract computation and functional numeracy. So, strategy-based instruction that ties decimal concepts to real-life situations will help students better understand and stay interested.

### Divisibility

This refers to the property of a number that determines whether it can be evenly divided by another number without leaving a remainder, which forms the basis for identifying factors and multiples. Table 19 depicts the results for divisibility.

**Table 19 Divisibility**

Indicators	WM	SD	Interpretation
I can tell if a number is divisible by 2 by checking if it ends in 0, 2, 4, 6, or 8.	3.75	0.45	Strongly Agree
I can check if a number is divisible by 5 by seeing if it ends in 0 or 5.	3.75	0.45	Strongly Agree
I can tell if a number is divisible by 10 by checking if it ends in 0.	3.75	0.45	Strongly Agree
I can check if a number is divisible by 3 by adding its digits and seeing if the sum is divisible by 3.	3.83	0.39	Strongly Agree
I can identify if a number is divisible by 6 using the rules of 2 and 3.	3.75	0.45	Strongly Agree
I can quickly decide if a number is divisible or not without dividing fully.	3.83	0.39	Strongly Agree
<b>Average Weighted Mean</b>	<b>3.78</b>	<b>0.43</b>	<b>Strongly Agree</b>

Table 19 shows how well the learners understand the divisibility rules. The average weighted mean is 3.78, and the standard deviation is 0.43. This means that most people "Strongly Agree." Learners are confident in their ability to use divisibility rules correctly and quickly because they have a strong conceptual and procedural understanding of them. This kind of performance shows that strategy-based teaching is helping Grade 5 learners learn to understand numbers and patterns. "I can quickly decide if a number is divisible or not without dividing fully," and "I can check if a number is divisible by three by adding its digits and seeing if the sum is divisible by 3," got the most votes, scoring 3.83 out of 5. These results show that learners have learned to recognize divisibility patterns and can reason rather than rely solely on math formulas. Tan and Velasco (2023) say that this level of mastery shows higher-order thinking and numerical fluency, which are important skills for more complex reasoning in algebra and math.

The lowest-rated indicators, with a weight of 3.75, are simple divisibility checks for 2, 5, 10, and 6. These results, which are still interpreted as "Strongly Agree," suggest that, even though learners do well on simple division tasks, they may still need ongoing reinforcement to improve their accuracy and automaticity, especially for rules such as divisibility by 6. Cruz and Lim (2022) said that practicing number patterns in different ways and using visual aids can boost confidence and speed when doing math.

It was found that learners have a good understanding of divisibility rules, a necessary skill for learning higher mathematics concepts such as factorization, fractions, and problem-solving. This high level of mastery shows that strategy-based instruction helps students understand numbers in both analytical and intuitive ways. Teachers are told to sustain this progress by using pattern-based activities, interactive games, and number puzzles to help students better understand divisibility, while keeping them interested and motivated (Flores & Santos, 2021).

### Prime and Composite Numbers

Prime numbers have exactly two distinct factors-1 and itself-while composite numbers have more than two factors; these classifications are fundamental in understanding number properties and operations. Table 20 shows the results for prime and composite numbers.

**Table 20 Prime and Composite Numbers**

Indicators	WM	SD	Interpretation
I can tell if a number is prime by checking if it has only two factors (1 and itself).	3.75	0.45	Strongly Agree
I can identify composite numbers by checking if they have more than two factors.	3.75	0.45	Strongly Agree
I can list the prime factors of a given number.	3.75	0.45	Strongly Agree
I can determine if 1 is neither prime nor composite.	3.83	0.39	Strongly Agree
I can find all the factors of a number to check if it is prime or composite.	3.75	0.45	Strongly Agree
I can use prime and composite numbers to solve math problems (like simplifying fractions or factoring).	3.24	0.54	Agree
I understand that 2 is the only even prime number.	3.75	0.45	Strongly Agree
I feel confident explaining why a number is prime or composite to others.	3.83	0.39	Strongly Agree
<b>Average Weighted Mean</b>	<b>3.71</b>	<b>0.45</b>	<b>Strongly Agree</b>

Table 20 shows how well the learners understood and could use prime and composite numbers. The average weighted mean is 3.71, and the standard deviation is 0.45. This means that most people "Strongly Agree." This shows that students in Grade 5 are very good at identifying prime and composite numbers, grouping them, and using what they know about them. The results show that strategy-based teaching has effectively improved students' capacity to recognize number properties and to use these ideas to solve mathematical problems.

With a weighted mean of 3.83, "I can tell if one is neither prime nor composite" and "I feel confident telling others why a number is prime or composite" are the best indicators. These results show that students not only know how to define facts, but they can also confidently explain their thinking. Domingo and Ramirez (2022) argue that having students discuss how they think about math improves their metacognitive awareness and encourages conceptual understanding over memorization.

The lowest-rated indicator (WM = 3.24) says, "I can use prime and composite numbers to solve math problems (like factoring or simplifying fractions)." This shows that some learners still struggle to use basic number identification skills in problem-solving or procedural situations. Cruz and Lim (2022) noted that students often struggle to apply their knowledge of math to real-world problems. They stressed the importance of regularly combining problem-based learning with real-world practice.

Overall, the results show that students have a solid understanding of basic number properties, especially in identifying and explaining prime and composite numbers. However, to improve at math, lessons should continue to focus on hands-on activities such as finding the most significant common factor, simplifying fractions, and using factorization to solve real-world problems. Tan and Velasco (2023) argue that connecting these abstract ideas to meaningful, interactive tasks helps students remember them and strengthens their mathematical reasoning.

### Summary of Results

Table 21 shows the results on the level of mathematics competency performance based on the Summative Test Results of the competencies.

**Table 21 Summary of Results**

Indicators	WM	SD	Interpretation
Division of fractions	3.25	0.42	Agree
Decimals	3.55	0.46	Strongly Agree
Divisibility	3.78	0.43	Strongly Agree
Prime and composite numbers	3.71	0.45	Strongly Agree
<b>Average Weighted Mean</b>	<b>3.78</b>	<b>0.43</b>	<b>Strongly Agree</b>

Learners' scores on the most important Grade 5 math skills (division of fractions and decimals, divisibility, and prime and composite numbers) are shown in Table 21. The results show that the overall weighted mean is 3.57, and the standard deviation is 0.44. This means that most people "Strongly Agree." Additionally, this outcome demonstrates that students excel in understanding and applying basic mathematical concepts. This shows that strategy-based instruction improves both conceptual understanding and procedural fluency.

With a weighted mean of 3.78, divisibility received the most votes. This means that learners have mastered the number rules and patterns that enable them to quickly and accurately determine divisibility. This shows that you have strong fundamental skills in number sense and analytical thinking, which are needed for more complex math operations such as factoring and simplifying fractions. Tan and Velasco (2023) argue that understanding the properties of numbers, such as how many times they can be divided, enhances students' cognitive flexibility and helps them solve problems more effectively.

On the other hand, dividing fractions received the lowest score, with a weighted mean of 3.25, indicating "Agree." This means that even though learners know how to perform the steps of fraction division, they still need more help understanding the concepts and applying them, especially when solving word problems and interpreting answers. Flores and Santos (2021) noted that fraction operations are often complex because they require both strong conceptual reasoning and fluency with the steps involved.

The results show that learners do well in most areas, especially in skills involving relationships and numerical operations. The good results in decimals, divisibility, and prime and composite numbers show that contextualized, strategy-based teaching methods that involve students in active exploration and real-life applications work well. However, the slightly lower performance in dividing fractions suggests that more scaffolding and visual modeling techniques are needed to help learners remember what they have learned. Domingo and Ramirez (2022) noted that continuous reinforcement through differentiated instruction and formative assessment ensures that learners master the material in a meaningful way and over time.

### Significant Relationship

This section presents whether there is a significant relationship between the status of strategy-based Mathematics teaching implementation and the level of mathematics competency performance based on the Summative Test Results of the competencies.

**Table 22 Significant Relationship**

Variables	df	T-statistics	Computed r value	Critical p-value	Decision	Interpretation
The status of strategy-based Mathematics teaching implementation and the level of mathematics competency performance based on Summative Test Results of the competencies	60	2.3509	0.4012	0.0175	Reject H <sub>0</sub>	Significant

@ 0.05 level of significance

Table 22 illustrates the significant relationship between the status of strategy-based Mathematics teaching implementation and the level of mathematics competency performance, as measured by the summative test results of the competencies.

Table 22 presents a statistical test of the relationship between the implementation of strategy-based mathematics teaching and summative test results in math competency. The analysis shows an r-value of 0.4012, a t-statistic of 2.3509, and a p-value of 0.0175, which is below 0.05. Thus, the null hypothesis ( $H_0$ ) is rejected, indicating a significant correlation between variables.

This suggests that strategy-based mathematics instruction affects student performance. The moderate positive correlation ( $r = 0.4012$ ) suggests that strategy-based teaching improves mastery of mathematical competency. Learner-centered and competency-aligned math instruction improves comprehension, retention, and problem-solving, according to Reyes and Alonzo (2021). Domingo and Ramirez (2022) noted that numeracy performance improves when instructional strategies are tailored to learners' cognitive abilities and contexts.

The findings show that effective instructional management-particularly planning, resource utilization, learner engagement, and feedback-improves achievement. This emphasizes the need for ongoing, strategy-based, assessment-driven teacher training. Garcia et al. (2023) found that systematic feedback, contextualized strategy use, and reflective teaching improve classroom efficiency and learner performance.

The significant correlation between the implementation of strategy-based teaching and mathematics competency performance indicates that strategic, adaptive, and learner-centered teaching practices improve academic performance. These strategies can be improved through training, mentoring, and collaborative lesson design to improve math skills and academic success.

## Issues and Concerns

Table 23 shows that teachers encounter challenges when implementing strategy-based teaching in Mathematics for Grade 5.

**Table 23 ISSUES AND CONCERNS**

INDICATORS	Frequency	Rank
Large class sizes make strategy-based activities difficult.	4	1
I face time constraints in fully applying strategies.	3	3.5
Limited resources hinder effective implementation.	3	3.5
Some math topics remain difficult even with strategies.	3	3.5
Word problems the hardest to understand.	3	3.5
Some learners are resistant to new strategies.	2	7.5
Lack of training reduces my confidence in strategy use.	2	7.5
I get nervous during math activities in front of the class.	2	7.5
Lack of materials makes it harder to learn.	2	7.5
I experience difficulty balancing strategies with curriculum pacing.	1	10

Table 23 lists the challenges teachers face when implementing strategy-based math instruction. The respondents' top concern is that "large class sizes make strategy-based activities difficult" (Rank 1). This suggests that overcrowded classrooms limit teachers' ability to monitor students, facilitate interactive activities, and provide individual feedback. Garcia et al. (2023) found that large classes make it difficult for teachers to manage group work and maintain meaningful engagement, which are essential to strategy-based instruction.

The moderate issues include "time constraints in fully applying strategies", "limited resources hinder effective implementation", "some math topics remain difficult even with strategies" and "word problems are the hardest to understand" (Rank 3.5). This shows how teachers struggle to balance strategy-based activities with curriculum pacing and resource availability. Although aware of more interactive methods, Lazaro and Dizon (2022) found that time management and material shortages in public schools often force teachers to rely on lecture-based methods. Strategy-based methods improve understanding, but some competencies still pose conceptual challenges for learners. Word problems require higher-order comprehension and translation of real-life situations into mathematical expressions, which can be difficult without scaffolding, according to Reyes and Alonzo (2021).

"Learners' resistance to new strategies", "lack of training reduces teacher confidence", "nervousness during math activities" and "lack of materials" are the issues that follow (Rank 7.5). The least-ranked issue, "difficulty balancing strategies with curriculum pacing" (Rank 10), suggests that most teachers can pace curriculum but struggle to incorporate innovative methods into time-limited instruction.

The data indicate that teachers are committed to strategy-based teaching, but class size, time, and resources prevent full implementation. Strategy-based Mathematics instruction can be sustained and effective by reducing teacher-student ratios, extending instructional time, providing materials, and continuing professional development. Domingo and Ramirez (2022) stressed that administrative support and professional collaboration are essential to overcoming instructional barriers and improving learning outcomes.

### 3. SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Chapter 3 gives the summary, findings, conclusions, and recommendations.

#### Summary

This study determined the effectiveness of strategy-based teaching in enhancing the mastery of Quarter 2 Mathematics competencies among Grade 5 learners at Cabancalan II Elementary School, Schools Division of Mandaue City, for the School Year 2025–2026. Specifically, it sought to describe the demographic profile of teachers and learners; assess the status of strategy-based Mathematics teaching implementation in terms of appropriateness of strategies, teacher preparedness and pedagogical knowledge, availability and use of instructional materials, learner engagement, and monitoring and feedback practices; evaluate learners' performance based on summative test results in division of fractions, decimals, divisibility, and prime and composite numbers; test the significant relationship between teaching implementation and learner performance; and identify the issues and challenges encountered by teachers in applying strategy-based teaching.

The study utilized a descriptive-correlational design. Data were gathered from 4 Grade 5 Mathematics teachers and 50 learners using validated questionnaires and performance-based summative test results. Statistical tools,

including the weighted mean, standard deviation, and Pearson's correlation, were used to analyze the data and assess the significance of relationships between variables.

### Findings

Findings showed that most of the teacher-respondents (50%) were aged 31–40 years, with an average age of 43.00 years, indicating a predominantly mid-career teaching population. All respondents (100%) were female, reflecting the ongoing feminization of the teaching profession. All teachers (100%) had earned more than 15 units in a master's program, indicating a strong commitment to professional growth. A majority (66.75%) had 21–30 years of teaching experience, suggesting a stable, experienced teaching force, while majority (75%) had attended 30–39 hours of training in Mathematics pedagogy or strategy-based instruction, indicating active participation in professional development.

For the learners' profile, most respondents (52%) were aged 9–10 years, which is appropriate for Grade 5 under the K–12 curriculum. The class was composed mainly of female learners (76%), showing a gender imbalance in participation. In terms of study habits, the majority (46%) studied 1–2 hours daily, while 42% studied 3–4 hours, reflecting moderate study engagement. Regarding home support, learners identified parents or guardians (30%) and siblings (24%) as their main sources of assistance, suggesting strong family involvement in home-based learning activities.

Results revealed that teachers were highly competent in implementing strategy-based teaching, with an overall weighted mean of 3.79 (Strongly Agree). The domain on appropriateness of strategies (WM = 3.83) was rated highest, indicating that teachers effectively matched instructional approaches to learners' needs and curriculum standards. Meanwhile, the lowest-rated domain, availability and use of instructional materials (WM = 3.75), suggested the need for improved access to updated resources and digital learning tools.

Learners' performance based on summative test results showed a high level of mastery with an overall mean of 3.57 (Strongly Agree). The highest performance was recorded in divisibility (WM = 3.78), while the lowest was in division of fractions (WM = 3.25), implying that conceptual understanding of fraction operations remains a challenge.

A moderate positive correlation ( $r = 0.4012$ ) was found between the status of strategy-based teaching implementation and learners' mathematics performance, with a p-value of 0.0175, lower than the 0.05 level of significance. This result confirmed a significant relationship, meaning that effective use of strategy-based instruction positively influences learners' achievement.

Teachers also identified several issues and challenges, with the most pressing being large class sizes, time constraints, and limited resources that hinder full implementation of strategies. Other notable concerns included learners' difficulty with word problems, lack of materials, and limited training opportunities.

### Conclusions

Based on the findings, it is concluded that strategy-based teaching significantly enhances learners' mathematical performance, particularly when teachers apply differentiated, contextualized, and learner-centered approaches. Teachers at Cabancalan II Elementary School demonstrate strong preparedness, pedagogical competence, and commitment to promoting active learning, though their efficiency is sometimes constrained by class size and resource limitations. The significant relationship between instructional practices and learner outcomes affirms that effective teaching strategies directly contribute to improved academic achievement. However, continued professional development and sufficient learning support are essential to sustaining instructional quality and addressing persistent learning gaps in fraction and problem-solving competencies.

### Recommendations

Based on the study's findings and conclusions, it is strongly recommended that the study's output—a framework for strategy-based Mathematics instruction and enrichment activities—be adopted and used by Grade 5 teachers to enhance learners' mastery of key competencies. School administrators and instructional leaders should integrate this output into learning action cell (LAC) sessions, classroom observations, and mentoring programs to strengthen teachers' pedagogical skills and ensure consistent application across classes. The Division of Mandaue City may consider adopting the proposed framework as a model for capacity-building initiatives and curriculum planning, promoting data-driven, contextually aligned instruction aligned with the DepEd agenda. Furthermore, teachers are encouraged to continuously refine and localize the strategies within the framework based on learners' needs, available resources, and assessment results. By promoting and institutionalizing the use of this output, schools can foster more effective, engaging, and learner-centered Mathematics instruction that leads to sustained improvement in students' academic performance.

#### 4. OUTPUT OF THE STUDY

The output of this study is a proposed Strategy-Based Mathematics Instructional Framework and Enrichment Activity Guide designed to enhance Grade 5 learners' mastery of key Quarter 2 competencies—specifically on division of fractions, decimals, divisibility, and prime and composite numbers. This framework was developed based on the findings of the study, which confirmed the significant relationship between the effective implementation of strategy-based teaching and learners' mathematics performance. It aims to provide teachers with structured, evidence-based strategies, contextualized learning activities, and feedback mechanisms that promote active learner engagement, conceptual understanding, and sustain academic improvement.

##### Rationale

The study's findings revealed that strategy-based teaching significantly improves learners' mastery of mathematical competencies, particularly when instruction is contextualized, interactive, and aligned with learners' needs. However, challenges such as large class sizes, limited materials, and time constraints hinder the full implementation of these strategies. To address these gaps, this output presents a Strategy-Based Mathematics Instructional Framework and Enrichment Activity Guide designed to strengthen teaching effectiveness and learner engagement in Grade 5 Mathematics.

This framework serves as a practical and evidence-based tool for teachers to plan, implement, and assess strategy-based instruction systematically. It provides clear guidelines for aligning teaching strategies with competencies, developing learner-centered materials, and incorporating feedback and remediation practices. By using this output, teachers can enhance instruction quality and promote deeper conceptual understanding among learners, particularly in areas where performance remains low, such as fraction operations and word problem-solving.

Furthermore, the output contributes to the school's instructional development by promoting consistency in teaching practices and supporting the Division of Mandaue City's efforts toward data-driven, outcome-based education. It reflects DepEd's MATATAG agenda of improving foundational skills in numeracy and fostering innovative, inclusive, and research-based approaches to teaching.

##### Objectives

The output aims to:

1. Provide teachers with a structured framework for implementing strategy-based teaching in Grade 5 Mathematics.
2. Develop enrichment activities that enhance learners' understanding and application of mathematical concepts.
3. Support professional development by promoting reflective and evidence-based teaching practices aligned with DepEd standards.

##### Scheme of Implementation

The proposed framework and enrichment guide shall be implemented through Learning Action Cell (LAC) sessions, classroom demonstrations, and mentoring programs. School administrators and master teachers will facilitate capacity-building workshops to familiarize teachers with the framework and integrate it into lesson planning and classroom practice. Continuous monitoring and feedback will be conducted through lesson observations, learner performance tracking, and periodic evaluation meetings to ensure effective implementation and sustainability. The school may also coordinate with the Division Office to explore adopting the framework as a division-level model for strategy-based Mathematics instruction.

**SCHEME OF IMPLEMENTATION**

Area of Concern	Objectives	Strategies	Persons Involved	Budget	Source of Budget	Time Frame	Expected Outcome	Actual Accomplishments	Remarks
<b>Orientation and Capacity Building</b>	To orient teachers on the developed Strategy-Based Mathematics Instructional Framework and Enrichment Activity Guide.	Conduct a school-based Learning Action Cell (LAC) session and training workshop to introduce the framework and its components.	School Head, Master Teachers, Grade 5 Mathematics Teachers	₱60,000	MOOE / School Fund	1st Quarter, SY 2025–2026	Teachers are oriented and demonstrate understanding of the framework and enrichment guide.		
<b>Implementation of Strategy-Based Teaching</b>	To apply the framework in actual Mathematics instruction across identified competencies.	Integrate strategy-based lessons in regular teaching; use enrichment activities for mastery and remediation.	Grade 5 Mathematics Teachers	₱15,000	MOOE / Division Support	2nd to 3rd Quarter, SY 2025–2026	Enhanced learner participation, engagement, and improved summative test results.		
<b>Monitoring and Supervision</b>	To ensure consistent and effective implementation of strategy-based teaching.	Conduct classroom observations, lesson reviews, and feedback sessions to monitor application fidelity.	School Head, Master Teachers, Research Coordinator	None	-	Quarterly	Continuous Improvement and alignment of teaching practices to the proposed framework.		
<b>Evaluation and Reflection</b>	To evaluate the effectiveness of the output and identify areas for improvement.	Gather post-implementation data on learner performance and teacher feedback for framework refinement.	Researcher, Master Teachers, Teachers	₱2,000	MOOE	4th Quarter, SY 2025–2026	Evaluation report prepared; framework adjusted based on findings and feedback.		
<b>Dissemination and Advocacy</b>	To promote the utilization of the study's output among other grade levels and schools.	Present the framework and results during INSET or division-level research conferences.	School Head, Researcher, Division Education Program Supervisor (EPS) in Mathematics	₱30,000	Division / School Fund	End of SY 2025–2026	The output is institutionalized and adopted as a model for strategy-based instruction in Mathematics.		

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