

*STRATEGIC INTERVENTION MATERIALS IN MATHEMATICS FOR GRADE
ONE LEARNERS: AN ENHANCEMENT PLAN*

A Thesis

Presented to

The Faculty of the Graduate School
Felipe R. Verallo Memorial Foundation, Inc.
Clotilde Hills, Dakit, Bogo City, Cebu

In Partial Fulfillment

of the Requirements for the Degree
Master of Arts in Education
Major in Administration and Supervision

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August 2025

APPROVAL SHEET

This thesis entitled “*Strategic Intervention Materials in Mathematics for Grade One Learners: An Enhancement Plan*” prepared and submitted by *Mariche B. Pesiao* in partial fulfillment of the requirements for the degree of Master of Arts in Education major in Administration and Supervision has been examined and is recommended for acceptance and approval for An Oral Examination.

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Date and Rating:

Comprehensive Examination	December 8, 2024	Passed
Design Hearing	May 4, 2025	Passed
Oral Examination	August 10, 2025	Passed

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ABSTRACT

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Mathematics is known to many as a complex and difficult learning area. Numerous studies have revealed that most learners got anxiety in learning mathematical skills. And for that reason, education experts introduced a tool that can be helpful in teaching the least-mastered skills in Mathematics, and that tool is called Strategic Intervention Material [SIM]. SIM caters to diverse learning needs by providing activities that suit to the level of learner's interest and readiness, making them learn in their own pace. Also, SIM plays an important role in teaching mathematical skill especially in Key Stage 1 learners , wherein the development of numeracy/mathematical skills must be given a top priority. This study centered on Strategic Intervention Material and Performance of Grade One Learners in Mathematics. The study employed a descriptive method of research and sought to explore on the profile of grade one learners as to their parents' educational background, combined family income, and number of family members. Likewise, the level of Mathematics performance of Grade one learners was determined before using SIM and after using SIM. Results of the study revealed that there was a significant difference in Mathematics performance of grade one learners before and after using SIM in teaching mathematical skills. Furthermore, the challenges encountered by the teachers on the use of SIM were: limited availability of resources, time constraint, and lack of training. Hence, an enhancement plan is designed.

Keywords:

Strategic Intervention Material [SIM], Profile of the learners, Mathematics performance, Challenges encountered, Enhancement plan

ACKNOWLEDGMENT

The researcher would like to express her gratitude to everyone who helped carry out this study.

The researcher would like to start by expressing her gratitude to Felipe R. Verallo Memorial Foundation, Inc. for providing her with this learning opportunity, which enabled her to acquire important life lessons about patience, perseverance, and the never-ending pursuit of knowledge.

To her supportive & resilient husband Orlan L. Pesiao for his unceasing encouragement & financial support for the study.

The researcher also expressed her gratitude to Dr. Ledesma R. Layon, the chairman of the thesis committee. Heartfelt thanks also to Dr. Agapito P. Pino who served as her thesis adviser, for the technical support and guidance he provided her during the research. All of his suggestions have been a huge help to her career. To the panelists, Dr. Gerardo S. Mantos, Dr. Corazon R. Mondelo, and Dr. Hubert G. Quinones for their thesis guidance and assistance.

To her co-teacher as RMA Coordinator in providing her the RMA results as bases for the study.

To her grade level co-teachers for cooperating in the conduct of series of questions during their vacant periods.

Above all, the researcher glorifies her gratitude to God for all the blessings showered upon her.

Mariche B. Pesiao

DEDICATION

This thesis is dedicated to the people who have been with me throughout this journey.

To my husband, thank you for your unconditional love, guidance, and sacrifices. You have always believed in me, even when I doubted myself.

To my sons, your encouragement kept me going in my toughest moments.

To my parents and siblings, thank you for your support and laughter that lit up my days. You reminded me to take breaks and smile when things felt overwhelming.

To my teachers and mentors, your patience and knowledge inspired me to work hard. You made learning a rewarding and meaningful experience.

To my friends, thank you for the conversations, motivation, and good memories. Your presence brought joy and balance to my life.

To those who believed in me, even from afar, thank you. Your faith in me added strength to my journey. Every challenge faced made me stronger and more determined.

This thesis is the result of many small efforts, supported by many hearts. I dedicate this work to all of you.

Thank you for being part of my story.

Mariche B. Pesiao

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CHAPTER 1

THE PROBLEM AND ITS SCOPE

This chapter presented the introduction, statement of the problem, significance of the study, and the definition of terms used in this research. It provided an overview of the research focused, outlined the specific issues addressed, highlighted the importance of the study, and clarified the terms used in the research.

INTRODUCTION

This section presented the rationale and theoretical background of the study. It also detailed the terms specifically used in this study and explained the study's significance. Further, this section cited situations and scenarios that inspired the researcher to pursue this study.

Rationale

Segarino, et al. (2022), maintained that Mathematics is considered as an essential learning area that needs to be taught yet quite challenging. According to Cargnelutti (2017), "it was usual for students to view mathematics as a difficult subject and for many of them to exhibit arithmetic anxiety in their daily lives outside the classroom" (Segarino, et al., 2022). Thus, one innovation that is developed to improve learners' mathematical skill is using SIM in teaching or in remediation program (Cerujano, 2019).

According to Sadsad (2022), educator achieves high quality education by being able to provide remediation to learners with low academic performance through using Strategic Intervention Material [SIM]. Correspondingly, Dy (2018), “maintained that SIM is a tool that is included on teaching techniques to increase the level of knowledge of the students”.

Acera (2022), highlighted the importance of using strategic intervention materials in teaching mathematical skills particularly in the elementary and secondary levels, “where’s it’s critical to develop a positive study habit and a firm grasp of the key ideas” (Segara,et al. 2022).

Researches in Taiwan of Yeh, et al. (2019), studied the use of Math-Island as a strategic intervention material in elementary mathematics. The study’s result proved that there is an increase in students’ mathematics achievement, especially in the calculation and word problems. In the same country, Chen, et al. (2012) designed a cross-number puzzle game for practicing arithmetic expressions and denoted that students could individually or collaboratively solve a puzzle, which involved extensive calculation and revealed that the low-ability students in the collaborative condition made the most improvement in calculation skills.

On the same manner, Arthur, et al. (2022) in Sub-Saharan Africa, claimed that students’ learning interest in mathematics partially mediated when using peer assisted learning as an enhancement tool in improving students’ performance in mathematics.

In particular, there are also researches in the Philippines which proved the significance of SIM in improving learners' performance in mathematics. Zabala (2023), investigated the effectiveness of Strategic Intervention Material (SIM) in improving the academic achievement of Grade 11 students in distinguishing stocks and bonds at Davao. The results showed that SIM significantly improved the academic achievement of students in distinguishing stocks and bonds.

Cordova, et al. (2019), claimed that SIM is used in classes' remediation to give focus on developing the least mastered skills of the learners as identified. Their study revealed that using competency-based SIM in English 7 had developed and improved learners' performance.

Relatively, the Department of Education [DepEd] has been imposing the use of Strategic Intervention Material [SIM] in enhancing literacy and numeracy skills of the learners. According to DepEd, learners' literacy and numeracy skills should be enhanced in the early years of schooling. Likewise, Gun-ob Elementary School cultivates a culture of excellence and a commitment to growth. Thus, assessment in mathematics was implemented through Rapid Mathematics Assessment to determine the mathematical ability of the learners and learners who belonged to the low mathematical level were provided with enhancement session through using Strategic Intervention Material (SIM). Hence, this scenario encouraged the researcher to conduct a study on Strategic Intervention Materials (SIM) on Mathematics for Grade One Learners that will be the basis in designing an enhancement plan.

Theoretical Background

This section discussed the legal bases and theories that were cited in this research and provided a deeper meaning of this work. It detailed the memorandum, order, and theory that were explored.

Legal bases. This section explored the legal bases used in this research and were arranged according to its relevance. These were: Strategic Intervention Materials [SIM], (DM 117, 2005); Learning Action Cell (DO 35, 2016); and Administration of the Rapid Mathematics Assessment [RMA], (DM 440, 2024).

This study was mainly anchored on *Strategic Intervention Materials [SIM] Workshop*, (DM 117, 2005), which paved the way for teachers to develop and use SIM in classrooms. Individual needs are addressed by instructions and interventions.

This workshop serves as a response to students' learning difficulties, and it highlights the value of workshops for teachers in crafting these materials. The goal is to enhance learning outcomes by equipping educators with the skills to address least-mastered competencies. The workshop element of DepEd Memo No. 117, s. 2005 is vital in ensuring the effective creation and use of SIMs. By training teachers through practical, collaborative, and creative means, the DepEd promotes a proactive approach to remedial learning and the overall improvement of educational outcomes. These workshops are not just about producing materials—they are about developing skilled, innovative educators who can adapt to diverse learner needs.

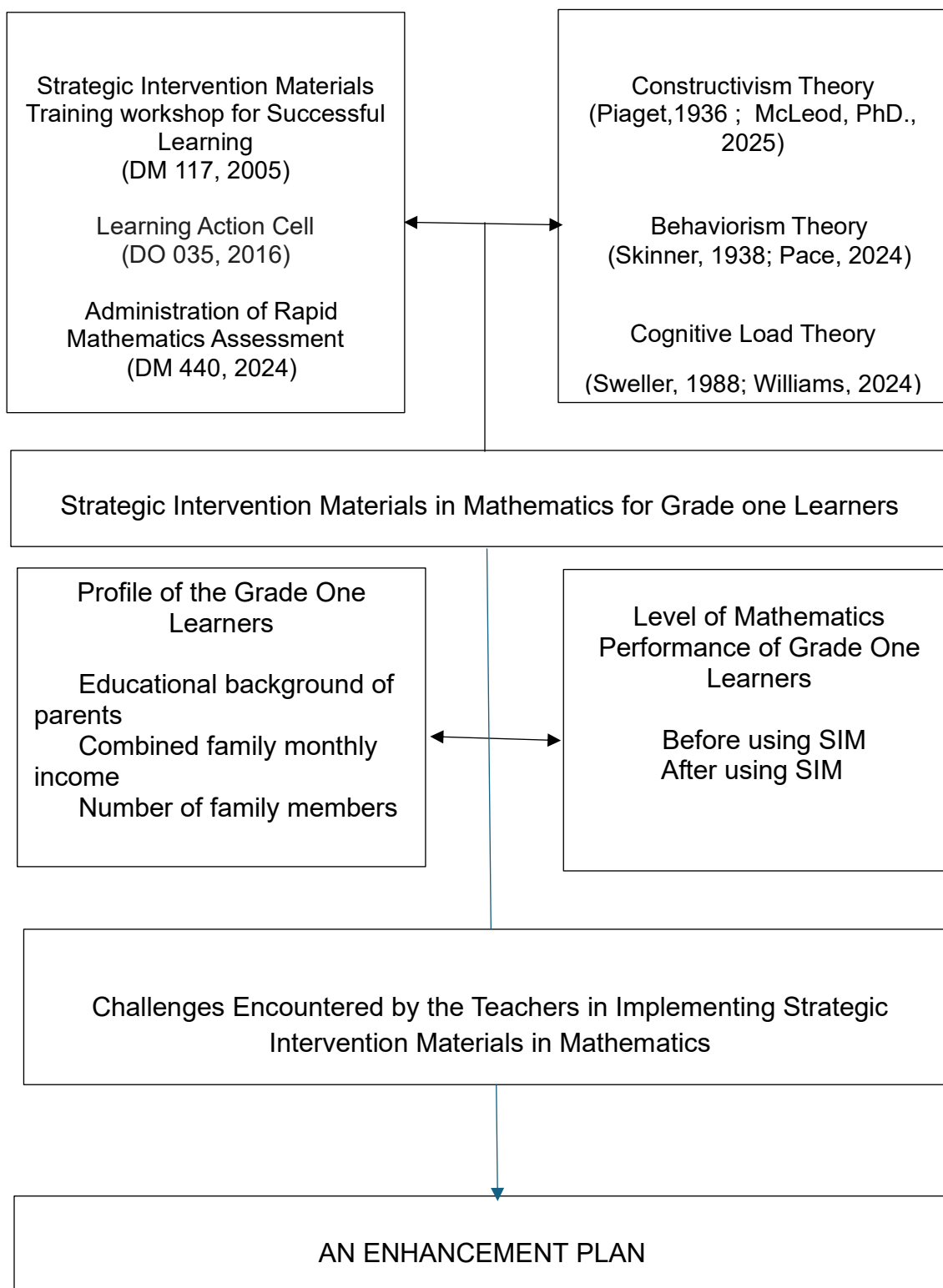


Figure 1. Schematic Diagram of the Theoretical Background

Another anchorage is the *Learning Action Cell [LAC]*, (DO 35, 2016), which is institutionalized by the Department of Education. The aim of this order is to support continuing professional development (CPD) of teachers through school-based, collaborative learning. DepEd's emphasis on LAC sessions reflects its commitment to continuous, collaborative professional development. When properly implemented, LACs foster a culture of shared leadership, innovation, and reflective practice, ultimately benefiting both teachers and learners.

Moreover," DepEd as an institution of learning, works to protect and promote the right of Filipinos to quality basic education that is equitable, culture-based, and complete, and allows them to realize their full potential and contribute meaningfully to building the nation. The investment of the DepEd in the development of human potential is a commitment it makes not only to its learners but also its teachers. DepEd believes that successful teaching is a result of the systematic use of appropriate strategies for delivering and assessing the learning objectives targeted for each lesson", (DO 35, 2016).

"The primary goal of LAC is to enhance teaching quality and student learning outcomes by fostering a culture of continuous professional development. With this, teachers will be provided a platform to learn from each other and improve their pedagogical skills. Likewise, LAC encourages teachers to reflect on their practices and engages in action research. Furthermore, through Learning Action Cell [LAC] session, teachers develop a deeper understanding of the curriculum and classroom management. Thus, LAC session involves planning,

implementing, monitoring, and evaluating activities, with a focus on addressing specific challenges and improving teaching practices”, (DO 35,2016).

In addition, “curriculum contextualization is stressed out in the said order, which is defined as the process of matching the curriculum content and instructional strategies relevant to learners. Student diversity requires that teachers always consider individual differences in lesson planning and implementation. Hence, by linking new content to the local experiences that are familiar to the learners, learning will be more efficient for and relevant to them. And, this is where the development of Strategic Intervention Materials [SIM] comes in”, (DO 35, 2016).

Lastly, this study was banked on the Administration of Rapid Mathematics Assessment [RMA], (DM 440, 2024), which was issued by the DepEd Division of Lapu-Lapu City, outlining the administration of the Rapid Mathematics Assessment (RMA) for Grades 1 to 3 for the School Year 2024–2025. This initiative aims to evaluate students' proficiency in fundamental mathematical concepts and literacy skills, thereby informing targeted instructional strategies to enhance learning outcomes. The memorandum provides guidelines on the assessment's implementation, ensuring that educators are equipped to effectively administer the RMA and CRLA in their respective schools. The Rapid Mathematics Assessment (RMA) is an initiative of the Department of Education (DepEd) aimed at identifying learners' mastery levels in fundamental math skills. Although there is no single memorandum titled “DepEd Memo on RMA,” it is typically issued through regional or division-level memoranda and is aligned with

the Department's thrust to improve numeracy skills, particularly in early grade and junior high school learners.

Summing it up, the cited legal bases contributed a legal foundation in this study and highlighted that localization and contextualization of instructional materials played a great help for the success of teaching-learning process. Additionally, development of SIM must be based on the identified least-mastered or least-learned competency.

Theories. The theories in this study included Constructivism Theory, (Piaget, 1936; McLeod, PhD., 2025), Behaviorism Theory, (Skinner, 1938; Pace, 2024), and Cognitive Load Theory, (Sweller, 1988; Williams, 2024).

This study was mainly rooted on *Constructivism Theory*, (Piaget, 1936; McLeod, PhD, 2025), where learners build knowledge through experience and interaction. Constructivism is a theory in education that focuses on problem-solving and critical thinking, encouraging learners to connect new information with prior knowledge. It is a learner-centered approach wherein learners' perspective, interests, and cultural background play a significant role in shaping the learning process.

Constructivism holds that learning demands active engagement rather than passive reception of facts. Learners must interact with and question ideas, not merely hear them (McLeod, 2025). Furthermore, in constructivism, learners construct meaning only through active engagement with the world. Understanding must come from making meaningful connections between prior knowledge, new knowledge, and the processes involved in learning.

Next theoretical anchorage of this study is the *Behaviorism Theory*, (Skinner ,1938; Pace, 2024), where learning is shaped by reinforcement and repetition. SIMs include drills, feedback, and rewards to reinforce correct responses and encourage practice. According to Pace (2024), behavioral learning theory stands out as a pivotal framework within educational psychology and otherwise called as “behaviorism”. In educational setting, this theory posits a significance as it can give a structured and quantifiable approach to understanding and influencing student behavior.

Behaviorism Theory is deeply rooted in the contributions of several pioneering psychologist including B.F. Skinner (Pace, 2024). Operant conditioning emphasizes the role of reinforcement and punishment in shaping behavior (Skinner, 1938). Thus, it gave emphasis on observable behavior and environmental influences.

On one hand, reinforcement is a central concept where behavior is strengthened by a response consequence. Reinforcement can be positive (adding a desirable stimulus) or negative (removing an aversive stimulus) (Skinner, 1938; Pace, 2024). On the other hand,” punishment involves introducing an unpleasant consequence to decrease the likelihood of a behavior. Punishment can be positive (adding an aversive stimulus) or negative (removing a desirable stimulus). Hence, the application of behavioral principles to change behavior, often using a combination of reinforcement and punishment to improve or eliminate behaviors”, (Skinner, 1938; Pace, 2024).

Lastly, this research was anchored on *Cognitive Load Theory* (Sweller, 1988; Williams, 2024), where learning is hindered when working memory is overloaded. Williams (2024), cited Sweller (1998) who stated that *Cognitive Load Theory [CLT]* suggests that our working memory is only available to hold a small amount of information at any one time and that instructional methods should avoid overloading.

Williams (2024) suggested that for teachers to reduce cognitive load, activation of prior knowledge is important before sharing new information with students. It is said that our long-term memory has a number of organized patterns of knowledge known as schema. “Each schema acts as a single item in working memory, so can be handled easier than having lots of new, isolated information. Through retrieving information from the long-term memory via quizzes, visual aids, and discussions, learners can bring crucial information to working memory and assimilate new information to build upon what they already know” (Sweller, 1988; Williams, 2024 cited Baddeley, 2003).

According to Sweller (1998), the use of visual and verbal information to present new information to students has nothing to do with the infamous “learning styles”, rather empirical research suggests that our working memory has two points of entry. One accepts the auditory information, whilst the other visual. If the auditory and visual information correspond to one another, then the burden on working memory is far less than using one pathway alone. These steps provide learners with direction and support to create mental models of how to tackle a problem/ task, or what “good” looks like.

Cognitive Load Theory has been described as an “internationally well-known and widespread theory, which has been confirmed in numerous studies.

All in all, the theories cited in this research provided a stronger philosophical foundation on the topic being studied. It is emphasized in the cited theories that learners learn in diverse strategies and styles. In addition, most educational researchers and theorists emphasized the necessity of activating prior knowledge before presenting the new lesson and connecting it to the various learning activities.

THE PROBLEM

The study aimed to evaluate the effectiveness of Strategic Intervention Materials (SIMs) in Mathematics for Grade 1 learners at Gun-ob Elementary School, Lapu-Lapu City Division during the school year 2024-2025 and designed an enhancement plan that intensified the usage of SIM as a tool for improving learners’ performance in mathematics.

Statement of the Problem

Specifically, it sought to answer the following questions:

1. What was the profile of the grade 1 learners as seen in their:
 - 1.1 Educational background of parents;
 - 1.2 Combined family monthly income; and
 - 1.3 Number of family members?
2. What was the level of Mathematics performance of Grade 1 learners:
 - 2.1. before using SIM; and

2.2. after using SIM?

3. Was there a significant mean difference in Mathematics performance of grade 1 learners before and after using Strategic Intervention Materials?
4. What were the challenges encountered by the teachers in implementing Strategic Intervention Materials in Mathematics in grade one?
5. Based on the findings of the study, what enhancement plan could be designed?

Statement of the Null Hypothesis

The following null hypothesis was tested in this study. The statistical treatment was using the t-test for mean difference at 0.05 level of significance.

Ho: There was no significant difference in the mathematics performance of grade 1 learners before and after using the Strategic Intervention Materials (SIM).

Significance of the Study

This study was significant as it explored the effectiveness of Strategic Intervention Materials (SIMs) in enhancing the mathematical performance of Grade 1 pupils. The following individuals were the beneficiaries of this scholarly work:

Learners. Through using Strategic Intervention Materials [SIM] particularly in Mathematics, low-performing learners might develop positive attitude towards learning math competencies and tend to improve their performance if guided properly.

Teachers. This study encouraged teachers to put more efforts in developing SIMs as an enhancement tool in teaching mathematical competencies. Likewise, through this study teachers might be enlightened the essence of SIMs in teaching not just in Mathematics but also in other learning areas as well.

School Administrators. Results of the study might support the implementation of intervention programs aimed at improving academic outcomes, especially in foundational subjects like Mathematics.

Parents. Improved performance in Mathematics could ease the concerns of parents and encouraged more active participation in their child's learning process.

Department of Education. The study of Strategic Intervention Materials (SIMs) seemed significant to the Department of Education (DepEd) because it directly supported efforts to improve student learning outcomes, especially in subjects where learners commonly struggle. SIMs are designed to simplify complex topics, making them more engaging and easier to understand. Their use can help bridge learning gaps, enhance teaching effectiveness, and foster learner independence. For DepEd, integrating SIMs into the curriculum aligns with its goals of inclusive, learner-centered education and supports the implementation of remediation and enrichment programs. This ultimately contributes to higher academic performance and reduced dropout or failure rates.

The researcher. This study provided better insights to the researcher concerning on the development and usage of Strategic Intervention Materials [SIM] in improving learners' performance.

Future researchers. The study served as a reference for similar future studies and might contribute to the growing body of research on effective teaching strategies in early education.

DEFINITION OF TERMS

The terms used in this study were mostly constructs that were specified to the problem.

Challenges Encountered by the Teachers

This referred to the hindrances and difficulties that teachers met in developing SIMs and using SIMs as enhancement tools in mathematics.

Enhancement Plan

This referred to the output of this study that composed of the identified least-mastered skill in mathematics with corresponding activities or strategies that can be applied in the teaching-learning process to improve learners' performance in mathematics.

Level of Mathematics Performance

This term referred to the mathematical skills of the learners as reflected in the Rapid Mathematics Assessment [RMA] result, before and after using Strategic Intervention Materials [SIM].

Profile of Grade 1 Learners

These were the students enrolled in the first grade of elementary education, typically aged 6–7 years old. Likewise, this term referred to the target group for the intervention in this study is the Grade 1 learners of Gun-ob Elementary School as seen in their educational background of parents, combined family monthly income, and number of family members.

Educational background of parents. This referred to the highest educational attainment of the parents.

Combined family monthly income. This referred to the total amount of money that the family had in a month that was used for their budgetary expenses among the family members.

Number of family members. This referred to the persons living in a household.

Rapid Mathematics Assessment (RMA)

This referred to an assessment given to grades one to three learners to determine the pupils' mathematical skills levels as tabulated in a scores sheet namely: for intervention, for consolidation, and for enhancement.

Strategic Intervention Materials (SIMs).

These were the instructional materials developed to address learning gaps and difficulties among students. In this study, SIMs in mathematics were specially designed as teaching aids used to help Grade 1 pupils better understand basic mathematical concepts.

CHAPTER 2

RELATED LITERATURE AND STUDIES

This chapter detailed literature and studies that were taken from foreign and local researches. Also, this chapter provided a scientific basis on why there's a need to study the topic and gave more research-based insights that help created a stronger foundation of this study.

RELATED LITERATURE

This section presented foreign and local literatures that were relevant to this study. Likewise, it showed and identified the research gaps in the existing study.

Foreign

The review of related literature from international settings created a global touch in this scholarly work. Likewise, it paved a way for the researcher to dig deeper on the effectiveness of using Strategic Intervention Materials [SIM] from countries outside the country.

Importance in using strategic interventions in mathematics. Cai (2010) emphasized that strategically designed interventions significantly improve students' conceptual understanding in early Mathematics education. Developing students' mathematical understanding requires intentional and research-based approaches that address both conceptual and procedural knowledge. E that

target students' specific learning gaps and misconceptions. These strategic interventions often include formative assessments, differentiated instruction, and the integration of manipulative and visual representations to deepen comprehension. For example, using number lines, area models, or algebra tiles can help students grasp abstract concepts through tangible means. Strategic questioning and guided discovery further support learners in making connections and constructing meaning, rather than merely memorizing rules.

Moreover, effective interventions go beyond content delivery—they foster mathematical reasoning, critical thinking, and a growth mindset. Structured peer collaboration, scaffolding, and timely feedback are key elements that support students' progress. Educational research shows that when teachers actively analyze student work and adapt instruction based on evidence, students gain a more robust and lasting understanding of mathematical ideas. These practices encourage learners to see mathematics as a logical, connected discipline rather than a set of isolated procedures. Ultimately, strategic interventions rooted in educational studies not only improve performance but also empower students to become confident, independent problem-solvers (Cai, 2010).

Swanson and Hoskyn, (2001), highlighted that targeted materials help build problem-solving skills and reduce math anxiety in early-grade learners. Instructing children with learning disabilities requires interventions grounded in empirical research to ensure effectiveness and meaningful learning outcomes. Research-based strategies such as explicit instruction, multisensory teaching, and scaffolded support have proven successful in addressing diverse learning

needs. By breaking tasks into smaller, manageable steps and providing consistent feedback, educators can help students build skills gradually and gain confidence. Additionally, incorporating assistive technology and individualized education plans (IEPs) allows for personalized learning experiences that accommodate specific strengths and challenges. Empirical studies emphasize the importance of early identification and targeted instruction, which can significantly improve academic performance and foster a more inclusive, supportive learning environment.

Gersten, et al. (2009), supported the use of visual and concrete materials (like SIMs) to enhance understanding in foundational Mathematics topics. Mathematics instruction for students with learning disabilities, as highlighted in various meta-analyses, underscores the effectiveness of structured, explicit teaching strategies combined with visual and hands-on learning supports. These analyses reveal that interventions such as step-by-step instruction, use of graphic organizers, systematic review, and guided practice significantly enhance students' understanding and retention of mathematical concepts.

Additionally, incorporating strategy instructions such as schema-based problem solving—and technology-assisted learning tools has been shown to improve problem-solving skills and engagement. “The value of individualized, evidence-based approaches that address both cognitive and motivational barriers, ultimately leading to better academic outcomes for learners with disabilities” (Gersten, et al., 2009).

Also, Bryant, et al. (2006), stated that SIMs aligned with the principles of early intervention boost students' problem-solving abilities. A comprehensive review of Mathematics interventions for early learners highlights the effectiveness of targeted, evidence-based strategies in developing foundational numeracy skills during the critical early years of education. These interventions often include activities that focus on number sense, counting, early operations, and spatial reasoning, delivered through explicit instruction, hands-on manipulative and interactive games. The review emphasizes that early, well-structured interventions can significantly reduce achievement gaps, particularly for students at risk of falling behind. In addition, combining conceptual understanding with procedural practice, along with frequent progress monitoring, leads to lasting improvements in mathematical achievement and prepares young learners for more complex math learning in later grades.

Clarke and Shinn. (2004), highlighted the role of strategic materials in diagnosing and improving foundational Mathematics skills. A preliminary investigation into the identification and development of early math skills underscores the importance of recognizing key numerical competencies in young children, such as number recognition, counting, quantity comparison, and basic problem-solving. They stressed that structured early learning experiences—integrating play-based activities, explicit instruction, and caregiver involvement—support the development of foundational Mathematics concepts. This early focus not only strengthens cognitive development but also sets the stage for long-term academic success in Mathematics.

Lastly, Jordan, et al (2009), wrote the long-term benefits of early intervention strategies and materials in Mathematics education. Early Mathematics competence, particularly in kindergarten, plays a critical role in predicting later mathematical achievement and overall academic success. Research on the importance of early math highlights that children who enter school with strong number skills—such as counting, number recognition, and understanding quantity—are more likely to perform well in math throughout elementary school and beyond. These foundational skills form the building blocks for more complex mathematical concepts, including arithmetic, problem-solving, and algebraic thinking. The evidence emphasizes that early interventions and quality instruction in number competence during kindergarten can have lasting impacts, narrowing achievement gaps and setting the stage for continued growth in Mathematics.

Playing linear number board games promote low-income children's numerical development. Siegler and Ramani (2009), developed an interactive and strategic materials “playing linear and number board games”, that significantly improved number sense in early grade students. Linear number board games have been shown to significantly promote numerical development in low-income children by providing an engaging, hands-on approach to understanding number magnitude, counting, and numerical relationships. These games help children develop a mental number line and improve key early math skills such as number recognition, sequencing, and basic arithmetic.

Unlike traditional instruction, linear board games offer repeated, meaningful exposure to numbers in a fun and interactive context, which is especially beneficial for children who may lack access to enriched mathematical experiences at home. These games serve as effective, low-cost interventions that help close the early math achievement gap often seen in economically disadvantaged populations (Siegler & Ramani, 2009).

Explicit instruction on addition and subtraction problem solving enhances struggling learners' performance. Powell, et al. (2013), explained that using explicit instruction in solving word problems enhanced performance of struggling learners. SIM-like strategies enhanced word problem performance for struggling math learners. Explicit instruction has been known to have a positive and significant impact on students' ability to solve addition and subtraction word problems by providing clear, structured teaching of problem-solving strategies. This approach involves direct modeling of how to identify key information, select appropriate operations, and apply step-by-step procedures to reach a solution. Through guided practice, visual aids, and repeated reinforcement, students learn to break down complex word problems into manageable parts, improving both their comprehension and accuracy. Furthermore, explicit instruction particularly benefits students who struggle with language or working memory, enabling them to build confidence and proficiency in mathematical reasoning and application.

Balanced integration approach in teaching mathematics develops students' learning. Boaler (2002), explained that teaching Mathematics through both traditional and reform approaches offers students varied pathways to

understanding mathematical concepts. Traditional instruction often emphasizes procedural fluency, memorization, and teacher-led demonstrations, providing students with a structured and consistent foundation.

In contrast, reform approaches focus on conceptual understanding, problem-solving, and student-centered exploration, encouraging learners to construct their own mathematical knowledge through discussion, collaboration, and real-world applications. While traditional methods support mastery through repetition and direct instruction, reform strategies aim to make mathematics more meaningful and engaging. A balanced integration of both approaches can enhance student learning by combining the strengths of procedural skill development with deep conceptual insight (Boaler, 2022).

Using digital intervention tools to enhance mathematics learning. Hillmayr, et al. (2020), highlighted that technology-supported instruction in mathematics can enhance student learning. Likewise, use of intelligent tutoring systems or simulations such as dynamic mathematical tools were beneficial. On the same manner, Fraillon, et al. (2019), stated “that teachers’ views of digital media for teaching and learning or specific instructional design features of digital tools-came into focus, and their attitudes toward digital tools vary”.

Mayer (2014), described why learning with digital tools can be beneficial. “According to the dual –channel assumption, learners can organize information into two different cognitive structures, namely the visual and the auditory channel. The second assumption is the limited capacity of information processing in one channel. The third assumption is that learners need to engage actively

with learning content in order to comprehend new information”, (Mayer 2014, Hillmayr, et al.,2020). Hence,” technology-supported learning contributes a positive influence on students’ attitudes, however, different type of interactive digital tools vary in regard to the instructional design features they provide and can also have a diverse impact on student learning”, (Hillmayr, et al., 2020).

Local

This section detailed the reviewed literature from the different authors in the Philippines. Reviewing local literature strengthened the validity of this research and on why it was pursued.

Effectiveness of strategic intervention materials in supporting struggling learners. Aguanta and Tan (2018), pointed out that. Strategic intervention Materials [SIM] were highly effective in supporting students who struggle with academic concepts, particularly in areas like mathematics and literacy. These materials are carefully designed to target specific learning gaps through structured, sequential, and research-based activities that align with students’ individual needs. By incorporating visual aids, manipulatives, guided practice, and frequent feedback, strategic intervention materials enhance engagement, reinforce understanding, and promote skill mastery. Studies show that when used consistently and appropriately, these tools significantly improve student outcomes, boost confidence, and support the development of independent learning strategies, making them a valuable component of differentiated instruction.

Dizon (2014), demonstrated that the use of SIMs significantly improved problem-solving skills and comprehension among students. Strategic intervention materials have proven highly effective in supporting students who struggle with academic concepts, particularly in areas like mathematics and literacy. These materials are carefully designed to target specific learning gaps through structured, sequential, and research-based activities that align with students' individual needs. By incorporating visual aids, manipulatives, guided practice, and frequent feedback, strategic intervention materials enhance engagement, reinforce understanding, and promote skill mastery. Studies show that when used consistently and appropriately, these tools significantly improve student outcomes, boost confidence, and support the development of independent learning strategies, making them a valuable component of differentiated instruction.

Tabo and Espinosa (2018), highlighted that SIMs boosted student motivation and academic performance in mathematics, including foundational topics. The effectiveness of strategic intervention materials in teaching selected topics in mathematics lies in their ability to provide focused, structured support that directly addresses students' learning needs. These materials are crafted to reinforce key concepts—such as fractions, decimals, geometry, or algebra—through step-by-step instruction, visual aids, hands-on activities, and guided practice. Research and classroom applications have shown that when used consistently, these interventions lead to significant improvements in students' understanding, retention, and application of mathematical concepts. Moreover,

they help build learners' confidence and engagement, especially for those who struggle with traditional teaching methods, making them a valuable tool for enhancing both teaching effectiveness and student outcomes.

Garcia (2015), emphasized the effectiveness about Strategic Intervention Materials in Mathematics and stressed its positive impact on both student performance and attitudes toward the subject. By offering targeted, structured support tailored to address specific learning challenges, these materials help students grasp difficult concepts more effectively and develop essential problem-solving skills. The use of visual aids, interactive tasks, and step-by-step guidance enhances engagement and understanding, leading to measurable improvements in test scores and overall academic achievement.

Additionally, students often develop a more positive outlook on mathematics, gaining confidence and reducing anxiety as they experience success through accessible and supportive learning experiences. This dual benefit makes strategic interventions a powerful tool in fostering both competence and motivation in Mathematics (Garcia, 2015).

Sison (2021), discusses that teaching material is a common term used to describe the teacher's resources to deliver instruction as it support the student's learning and improve student's success. Strategic Intervention Material [SIM], are highly used instructional material that aids in remediation purposes especially in mathematics.

Similarly, Ganai (2016), highlighted that SIMs significantly enhanced students' academic achievements and comprehension of mathematical concepts.

Strategic intervention materials serve as an essential tool in improving students' academic performance in mathematics by providing focused, structured, and research-based learning experiences tailored to their needs. These materials are designed to reinforce fundamental concepts, clarify misconceptions, and promote active engagement through step-by-step instruction, visual support, and interactive activities. By targeting specific areas of difficulty and offering repeated practice with immediate feedback, they help students build confidence, strengthen problem-solving abilities, and achieve mastery of key mathematical skills. As a result, students not only show significant gains in assessments but also develop a more positive and motivated approach to learning Mathematics.

Abao (2017), gave emphasis on the use of strategic intervention materials in improving the math performance of Grade 1 pupils. By implementing carefully designed materials that focused on foundational skills such as counting, number recognition, and basic addition and subtraction, the research provided targeted support to young learners struggling with core concepts. Through engaging activities, visual aids, and consistent guided practice, students demonstrated increased participation, improved test scores, and greater confidence in their math abilities.

Paniza (2015), opined that customized SIMs greatly helped young learners grasp basic fraction concepts more effectively. An action research study on the effectiveness of teacher-made strategic intervention materials focused on teaching fractions to Grade 1 pupils demonstrated promising results in enhancing students' comprehension and performance. The materials, tailored to the

learners' developmental level, utilized visual representations, hands-on activities, and simple, relatable contexts to introduce basic fraction concepts such as halves and wholes. Through repeated, structured lessons and interactive exercises, pupils showed notable improvements in identifying and understanding fractions, as well as increased engagement and enthusiasm in math lessons.

According to Del Rosario (2019), strategic intervention materials serve as effective tools in remediating learners with difficulties in Mathematics by providing targeted, structured support that addresses specific learning gaps. These materials are designed to simplify complex concepts through visual aids, step-by-step instructions, and interactive activities that cater to diverse learning styles. When used consistently, they help struggling students build foundational skills, correct misconceptions, and develop greater confidence in their abilities. Research and classroom practice have shown that strategic interventions not only improve academic performance but also foster a more positive attitude toward math, making them essential resources in supporting learners who require additional guidance and reinforcement.

Furthermore, Reyes (2016), cited that structured SIMs developed better math concept retention among first-grade pupils. Likewise, Cruz (2018), wrote in an Unpublished Action Research, DepEd NCR entitled *The Impact of SIMs in Teaching Addition and Subtraction in Grade 1 Mathematics* that strategic materials tailored to specific competencies increased both proficiency and learner interest in Mathematics 1. Developing strategic intervention materials for Grade 1 mathematics by learners themselves fosters deeper engagement,

creativity, and ownership of their learning. When students are involved in creating simple learning tools—such as flashcards, number games, or visual models, they actively process mathematical concepts like counting, addition, and basic fractions in meaningful ways. This hands-on, participatory approach enhances understanding and retention while allowing teachers to assess how well students grasp the content. Moreover, involving learners in the development process promotes collaboration, confidence, and a sense of accomplishment, making mathematics more enjoyable and less intimidating for young students.

Finally, Dumigsi and Cabrella (2019), highlighted that the SIM was designed as a remediation tool for students in teaching one of the least-learned competencies. They said that low performance of students poses a significant challenge to the education arena amidst the rapid growth of technology and other media that were used in teaching. Thus, SIMs enhanced students' performance.

Challenges in using SIM in teaching mathematics. Jugar and Tadeo (2014), cited that the preparation of SIM is tedious and time-consuming. Salvador (2016), said not all teachers are adequately trained in the development and proper use of SIMs. Materials such as printers, colored paper, and technology may also be inaccessible in resource-limited schools. Moreover, Dela Cruz (2017), opined that “students may not respond positively to SIMs if the material is not engaging or if it does not cater to their specific learning needs”.

Correspondingly, Garcia and Villanueva (2020), cited that there are some SIMs that are not fully aligned with the intended competencies and caused misleading. Reyes and Magno (2015), highlighted that SIMs are effective when it

is contextualized and localized wherein learners can relate to it considering the diversity of learners. In addition, Torres (2019), stated that there are also teachers who disregard the usage of SIM in teaching especially in remediation purposes as it consumes time and requires more efforts in the making of SIM. Aside from that, Flores and Evangelista (2021), stressed that “too much usage of SIMs is not helpful anymore for both teachers and learners, as it poses limitations to their creativity, critical thinking skills, and exploration.

Synthesis

Through careful examination of the reviewed literature, both foreign and local, the researcher gained insights into previously explored concepts and methodologies that helped shaped this current study. Synthesizing literature from global and local perspectives, it revealed that Strategic Intervention Material [SIM] greatly contributed to the improvement of learners' performance, taking for instance in mathematics.

On one hand, there were authors from foreign literature who emphasized the use of explicit instruction as it aided the low-performing learners in mathematics like in teaching problem-solving skills that involved the fundamental operations. On the other hand, there were authors also from foreign literature who highlighted that balanced instruction (which means using traditional and explicit instruction) in mathematics led to learners' increased performance.

Furthermore, in the local perspectives, several authors emphasized the effectiveness of using strategic intervention materials as an enhancement tool in teaching mathematics and in giving remediation to low-performing learners not

just in mathematics but also in other subjects. However, there were local researchers who identified some challenges in using SIM, like: lack of resources, misalignment of SIM in the targeted competencies, lack of teacher's training, and too much dependence in the usage of SIMs.

RELATED STUDIES

This section presented the reviewed related studies from global and local perspectives. The reviewed studies were specifically discussed in this section and thoroughly explained, as to establish connection between the reviewed studies and the topic currently studied.

Foreign

Reviewing foreign related studies served as pillar for understanding the various perspectives globally concerning the topic currently studied. The insights gained from foreign related studies were useful in creating the inferences, findings, and conclusions of this work.

Using strategic instructional aids improved learners' performance in mathematics. Nzomo and Makuwa (2006), in Southern and Eastern Africa revealed in their study that the use of strategic instructional aids and intervention programs, such as learning kits and visual materials, significantly improved learners' Mathematics performance in early grades across several African countries. The researchers emphasized the need for learner-targeted interventions for low achievers. In their 2006 study, they emphasized the importance of translating cross-national research findings into actionable

educational policies. While their work did not specifically address the use of strategic intervention materials, they highlighted the necessity of implementing targeted interventions to address identified learning gaps. By analyzing data from SACMEQ, they underscored the need for evidence-based strategies to enhance educational quality and equity. Their research advocated for the development and application of tailored educational resources to improve student outcomes, particularly in mathematics and reading. This approach aligns with the broader objective of using empirical data to inform the creation of effective teaching materials and interventions.

According to Bekiryazici (2015) who investigated the “Effectiveness of Instructional Materials in Mathematics Teaching: A Case Study in Turkish Primary Schools”, students taught using interactive and strategic materials performed better on assessments and showed more interest in math. The study concluded that materials tailored to students’ learning gaps can address foundational math difficulties effectively.

Bekiryazici (2015), examined the impact of manipulative materials on the mathematics achievement of first-grade students. The research revealed that the use of educational materials not only supported the cognitive process in Mathematics learning but also increased children's interest and enjoyment in mathematics. These findings align with previous studies indicating that incorporating materials into mathematics instruction positively affects children's achievement and attitudes toward the subject. Materials that attract children's attention also appear to enhance their motivation levels. Therefore, the study

underscores the effectiveness of instructional materials in enhancing both the cognitive and affective domains of mathematics learning among young learners.

Kitta and Tilya (2010), claimed and documented in Tanzania on how intervention materials designed for early math education helped improve both teaching effectiveness and student performance. The use of manipulatives and contextual activities was central to their success.

Sidik, et al. (2023), “noted in their findings that using strategic intervention materials in teaching mathematics is effective in classroom implementation, as proven in the increased scores of students. Their study utilized the ADDIE model, which composed of five phases: Analysis, Design, Development, Implementation, and Evaluation”.

In the same vein, they noted in their findings that the development procedure of intervention material rooted toward the Pedagogical Content Knowledge (PCK) of prospective mathematics teachers in fractional number operations (Sidik, et al.2023).

Enhancing achievement and interest in mathematics learning through math-island. Yeh, et al. (2019), “maintained in their study that conventional teacher-led instruction was still dominant in most elementary mathematics classrooms in Taiwan. According to them, all student diverse needs won’t be catered using that teacher-centered approach. Thus, they developed an enhancement material called “math –island”, and explored its effectiveness in enhancing achievement and interest in mathematics, especially for those low-performing students”.

In the said developed strategic intervention material, there were two game mechanisms, construction and sightseeing. It was designed to help students manage their learning process, whereas the latter was designed to facilitate social interaction, which may further motivate students to better develop their cities. By doing so, the Math-Island can be regarded as one's learning portfolio, which is a complete record that purposely collects information about one's learning processes and outcomes (Arter & Spandel, 2006), cited by Yeh, et, al. (2019).

In addition, "the interest questionnaire comprised two parts: students' interest in mathematics and the Math-Island system. And, to examine whether the low-achieving students had low levels of interest in mathematics and the Math-Island system, their study adopted z tests on the data of the interest questionnaire. Hence, they concluded that the result of a two-year experiment with the Math-Island system, in which a knowledge map with extensive mathematics content was provided to support the complete elementary mathematics curriculum. Each road in Math-Island represented a mathematical topic, such as addition. And, as for enhancing achievement, the result indicated that the Math-Island system could effectively increase the students' ability to calculate expressions and solve word problems" (Yeh, et al., 2019).

Enhancing students' achievement in mathematics through technology integration, collaborative learning, and student motivation. Boadu and Boateng (2024), suggested in their study's findings that educators should focus on integrating technology and implementing collaborative learning strategies in

mathematics classrooms, as these approaches can directly improve student achievement, even when SMO is not a strong, mediating factor. The results indicated that creating a learning environment that emphasizes collaborative problem-solving, peer interaction, and the effective use of technology can be a powerful approach to enhance students' understanding and performance in mathematics.

Similarly, St Omer, et al. (2025), claimed that technology-enhanced mathematics learning continues to increase, thus, they investigated on this particular matter. Their study determined to explore how technologies interact with content and process standards, as well as their effective outcomes. They concluded that mathematics technologies have been coupled over time with other instructional elements such as functions of technology, mathematics standards, pedagogies, and learning outcomes. By highlighting exemplary instructional scenarios, it provides a blueprint for future instructional designers and practitioners.

“Taking for instance, the effective attainment of mathematics skills and procedural knowledge is achieved when guided, game-based, or collaborative learning is provided through the use of strategic interventions such as LMs, computer-based instructions or ICT integration” (St Omer, et al., 2025).

Mayer (2024) , claimed that “to evaluate the effectiveness of educational technology, the instructional efficiency and cognitive load should be examined before it is implemented to the young learners” . This is in consonance with Sweller (2020), study's claim, “that technology is often used merely as a direct

substitute for traditional methods, foregoing meaningful interactions, visualization, and representations that would be improbable without technological tools”.

Vivanco-Galvan, et al. (2024), maintained that mathematics education requires innovative didactic strategies to enhance the understanding and application of mathematical concept, as traditional teaching method often lack relevance like collaborative learning. In the same vein, collaborative learning encourages students to work together, discussing, and solving problems, which deepens their understanding through peer explanations and diverse perspectives. Likewise, problem-based learning involves students addressing real-world issues, helping them apply mathematical concepts (Vivanco-Galvan, et al., 2024).

Furthermore, the study’s findings of Vivanco-Galvan, et al. (2024), revealed that several key contributions and impacts such as innovative methodology, and offers empirical data demonstrating the effectiveness of DT compared to traditional teaching methods. Also, study’s result showed significant improvement in the experimental group’s post –test scores underscore the relevance of integrating collaborative learning and problem-solving strategies not only in improving academic performance but also in fostering critical thinking skills. In particular, a total sample of 138 students participated, and the study used the descriptive statistical method to evaluate the data obtained from the experimental group and control group after applying various instruments

(questionnaire, project test, workshop) to assess their knowledge of mathematical functions.

Local

This portion presented the related studies within the Philippine setting. The importance of SIM in the context of education in the country was detailed and proven by several researchers all over the Philippines.

Development and effectiveness of strategic intervention material. Perez, (2015) study in “Development and Effectiveness of Strategic Intervention Materials in Teaching Selected Topics in Grade 7 Mathematics”, showed that students exposed to SIMs performed significantly better than those taught using traditional methods. SIMs helped improve understanding of mathematical concepts through simplified explanations and engaging visuals. It explored the development and effectiveness of strategic intervention materials (SIMs) in teaching selected topics in Grade 7 mathematics. The research focused on creating SIMs tailored to address students' least mastered competencies, particularly in areas such as algebraic expressions and linear equations. Utilizing a quasi-experimental design, the study compared the performance of students who used the SIMs with those who received traditional instruction. Findings indicated that students exposed to the SIMs demonstrated significant improvements in their understanding and application of mathematical concepts, as evidenced by higher post-test scores and increased engagement during lessons. The study concluded that well-designed SIMs can serve as effective

tools in enhancing the academic performance of Grade 7 learners in mathematics.

Luzano (2016), found that using SIMs led to marked improvement in the math performance of Grade 1 pupils. The materials increased interest, reduced anxiety, and helped struggling learners catch up.

Furthermore, Flores (2017), researched about “Effectiveness of SIM in Teaching Basic Operations to Grade 1 Pupils in Laguna”. It concluded that SIMs are effective in helping Grade 1 pupils master basic operations in math, particularly addition and subtraction, by making the lessons more interactive and relatable.

Likewise, Cabansag (2014), studied the “Impact of Strategic Intervention Materials on the Academic Performance in Mathematics of Grade 6 Pupils” about Grade 6, the findings are relevant: learners who used SIMs showed significant gains in test scores. The study highlighted how the use of localized and contextualized materials made lessons more understandable.

DepEd Division of Ilocos Norte (2013) conducted and studied in the Pilot Implementation of SIMs in Early Grade Mathematics. It was a division-level project tested teacher-made SIMs across several elementary schools. The results indicated improvement in learner performance and interest in Mathematics, encouraging wider adoption of the approach. It supported the idea that SIMs are effective tools for enhancing mathematical understanding and performance, especially among early-grade learners in the Philippines.

In a study conducted by Delos Santos (2020), SIMs were utilized to teach basic operations in mathematics to Grade 2 students. Results showed a significant increase in post-test scores compared to pre-test scores, highlighting the effectiveness of SIMs in addressing learning gaps. Also, Rivera and Bautista (2019) found that students exposed to SIMs demonstrated improved problem-solving skills and higher engagement in class discussions. The study recommended the institutional use of SIMs, especially in low-performing schools where many learners struggle to cope with regular classroom instruction.

Martinez (2021) at Cebu Normal University explored the impact of SIMs on Grade 1 pupils' understanding of number patterns. The results indicated not only improved academic performance but also increased motivation and positive attitudes toward mathematics.

Legal (2025), determined the effectiveness of the Mathematics Enhancement Tool in improving the numeracy skill, specifically the understanding of fractions, of Osmeña Colleges Grade 4 students. Based on her study, it was concluded that the developed Mathematics Enhancement Tool [MET], significantly improved the numeracy skills and attitudes of Grade 4 students towards Mathematics. Further, her study's findings showed a significant difference between the pretest and posttest mean scores which demonstrated that integrating interactive, game-based instructional materials like Mathematics Enhancement Tool [MET], can effectively support students' academic growth in Mathematics. Beyond improving numeracy levels, the tool also created a positive

and engaging learning environment that encouraged active participation and fostered values such as independence and collaboration among learners.

Cariaga (2024), explored on validated strategic intervention in English for grade 7 learners at Doña Francisca Lacsamana de Ortega Memorial National High School, focusing on the mastery of the Most Essential Learning Competencies [MELCS] using a descriptive-developmental design, utilizing documentary analysis and survey questionnaire. It revealed that if the SIM is highly validated and proven effective in addressing the learning gaps, it will surely help the students to improve their performance. In the same vein, Cariaga (2024), “recommended in his study that adoption of Strategic Intervention Material [SIM} in teaching positively helps the low-achieving students”.

Bundang and Parangat (2022), also examined the effectiveness of teacher-made strategic intervention materials through instructional task performance and instructional supervision of the teacher in charge to assess students’ performance in Mathematics 8 in Zambales National High School. A quasi-experimental study design was used. Findings revealed that there was a highly significant difference for illustrating theorem on triangle inequalities, applying theories on triangle inequalities, proving inequalities, and proving properties of parallel lines cut by a transversal on the results of pre-test and post-test.

Components of SIM. Cariaga (2024), maintained in his study that a validated SIM will surely contribute an increased performance of the students. Thus, he identified that SIM should be composed of several components such

as: the Guide Card, Activity Card, Assessment Card, Enrichment Card, and Reference Card. In the study of Romero (2020) guide card introduces the lesson by outlining the learning objectives, key concepts, and step-by-step instructions, ensuring that both learners and teachers are aligned with the lesson's goals and how to use the materials effectively. Thus, it is found out in his study that some developed SIMs were misaligned from the targeted competencies and resulted to low level of learning.

Utilization of manipulative and interactive strategic intervention material in teaching. Contreras (2018), maintained that manipulative and strategic intervention material is “A Box within a Box”, an instructional tool that helped students in learning. Her study was conducted at Manila Science High School and the study was governed by the experiential learning theory which was further supported by social cognitive theory. Randomly selected respondents were asked to use MI-SIM and were asked to answer the researcher-made survey.

Moreover, Contreras (2018), recommended in her study that teachers should understand how learners learn from them to be able to develop the right SIM to be used for each of them.

Cañeda, et al. (2024), conducted a study on developing strategic intervention materials to boost grade seven competencies particularly in unlocking algebra. They employed an educational design approach to systematically design, develop, and evaluate the intervention. The study identified the most preferred activities by student evaluators across the six facets of understanding, which included “Concept Map”, “Represent Me”, “My

Facemask”, “Tiles”, “You Are X Years Old”, and “Synthesis Journal”. The results denoted that extension activity and implementation of the SIM to address students’ difficulties in the least learned areas.

Use of SIM in adding integers. Bernido (2023), developed Strategic Intervention Material (SIM), to reinforce, facilitate, and improve the identified least mastered competency among the 7th graders of an island school in Tabaco City, Philippines. The SIM was designed to help selected 20 subjects of the study relearn the competency in adding integers since number sense is crucial in learning higher skills in mathematics. Results showed that the use of SIM is effective in improving learners’ performance on the least mastered competency, based on the t-test result, and as confirmed by the performance level.

Synthesis

Based on the reviewed related studies from foreign and local sources, researchers around the world agreed that Strategic Intervention Material [SIM] played a crucial role in improving the mathematical performance of the learners. As proven in the studies conducted in and out of the country, SIM enhanced the performance of learners in fraction, arithmetic, algorithm, and calculus. Not only that SIM is effective in math, as per results of the various research, SIM also developed learners’ attitude towards learning Mathematics considering that it is one of the difficult subjects. Furthermore, there were researchers in and out of the Philippines who claimed that validated Strategic Intervention Material [SIM] is more recommended to be used compared to those invalidated developed SIMs. In addition, there were also reviewed studies that emphasized the use of

technology-based instruction in mathematics by providing interactive and game-based learning activities as enhancement tools in teaching mathematical competencies.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presented the research methodology employed, the targeted respondent-individuals, the environment, the statistical treatment utilized, and the gathering procedures done in order to generate the needed data that was analyzed and interpreted, and made the basis in coming up with inferences and recommendation. It also showed the scoring procedure of the numerical data that provided the figures used for analyses and interpretations, paving the way to inferences, and conclusion.

METHOD

This section presented and discussed the method that will be utilized in this study. It described the details and importance of selecting the most appropriate method to be used in the research.

This study was utilized the descriptive method of research. The descriptive method is the most popular approach since it enumerates the traits of a person, a group, or an environment. This type of research methodology was used by the researcher to get first-hand information from the outcomes of the respondents' evaluations, which help to generate logical and sound findings and suggestions for the study. This method described the profile of the grade one learners in terms of the educational background of parents, combined family monthly income, and number of family members.

It also allowed the researcher to assess the level of mathematics performance of Grade one learners using the RMA adopted tools, and the challenges encountered by the teachers in implementing strategic intervention materials in mathematics for grade one learners.

The results of the study could be used as the bases in designing an enhancement plan for grade one learners that would help them improve the mathematics performance and academic achievement.

FLOW OF THE STUDY

This portion showed the schematic representation of the flow of the research study. It started from the left going to the right. The leftmost box revealed the inputs, the middle box displayed the process, and the rightmost box exhibited the output of the study.

Input

The input provided the profile of the grade one learners in terms of educational background of the parents, combined family monthly income, and number of family members.

Secondly phase was the level of mathematics performance of Grade one learners using the RMA tool; before and after using SIM. Lastly, the challenges encountered by the teachers in implementing strategic intervention materials in mathematics for grade one learners.

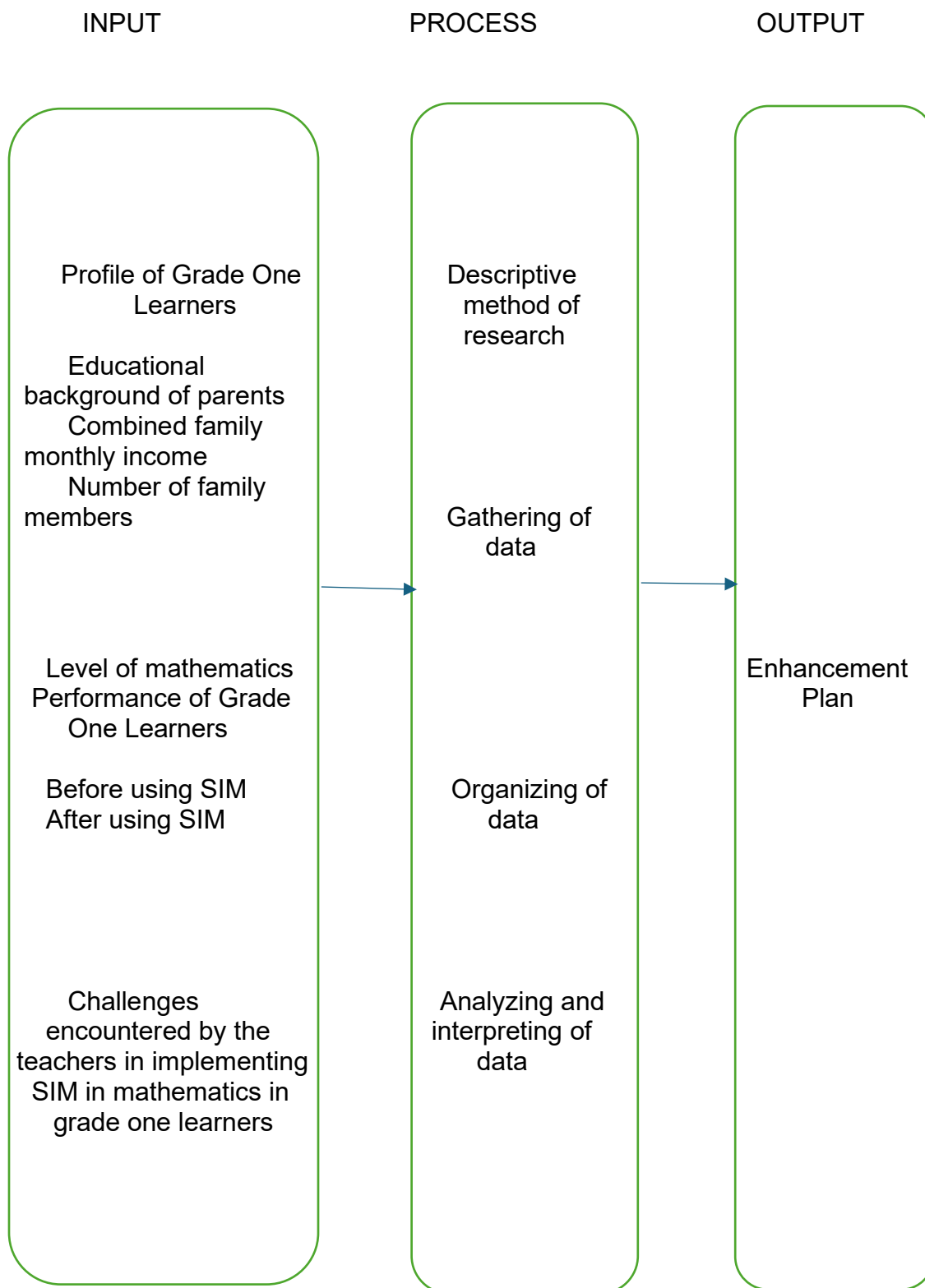


Figure 2. *Schematic Diagram of the Flow of the Study*

Process

The process phase started after all the necessary communications would be approved. This phase would be included the administration of questionnaires to respondent groups. Research questionnaires intended for the teachers and grade one learners of Gun-ob Elementary School, Lapu-Lapu City Division during the school year 2024-2025, that would be personally distributed, administered, and retrieved by the researcher. After gathering all relevant data, results from the retrieved questionnaires as well as the secondary data would be tallied, tabulated, statistically treated, and interpreted before conclusion and recommendation would be formulated.

Output

The third phase of the study would served as the springboard in designing an enhancement plan on the strategic intervention materials in mathematics of the grade one learners for implementation and would aimed to improving the mathematical skills and academic performance of the schools in Lapu-lapu City Division.

ENVIRONMENT

The study was conducted in Gun-ob Elementary School among the grade one leaners. This school was in Gun-ob, Lapu-Lapu City. It belonged to District 6, Division of Lapu-lapu City. Gun-ob Elementary School (GES), the lone public elementary school in Gun-ob, Lapu-Lapu City, was established in January 1964. It was located 1.8 kilometers away from the Lapu-Lapu City Division office and

Map of Lapulapu City

**Figure 3.** Map of the Research Environment

situated just at the side of the Lapu-Lapu City District Hospital and a few steps from Gun-ob Barangay Hall. It has a total land area of approximately nine thousand, two hundred thirty-seven square meters (9, 237 m²) acquired through donations.

The K to 12 Curriculum was used from kindergarten to Grade Six in the delivery of instruction using the different strategies and methodologies which were developmentally appropriate for the learners.

It has 56 nationally funded teaching personnel. Among the 56 teachers, five (5) were Master Teacher I, twenty-eight (28) Teacher III and twenty-three (23) Teacher I. It has 17 buildings with 36 classrooms utilized by 54 classes. There were 26 classrooms with comfort rooms. The Grades One, two and three classes were observing shifting classes due to the shortage of classrooms. It has a computer room with 14 units of computers. The Home Economics building served as a multifunctional area school clinic and canteen, feeding area. It has 1 security guard and 2 utility workers funded by school MOOE and PTA voluntary donations. The school has a covered court and a stage that was partially damaged by Typhoon Odette, which needs to be repaired. This was where different school activities and events in the district or division are held. The school has its source of water for cleaning and watering the plants since it has its own artesian well and electric pump. It has Twenty-two (22) individual handwashing facilities.

RESPONDENTS

This section discussed the sample frame and the target population.

This described the sampling technique in obtaining the sample data in the research investigation. The researcher was employed the population of the grade one learners, and teachers' respondents of Gun-ob Elementary School, Lapu-lapu City Division, Lapu-lapu City, Cebu. The number of respondents per group category are reflected in the Table 1.

Table 1

Distribution Profile of the Participants (n= 104)

Participants	Frequency (f)	Percent (%)
Learners	96	92.31
Teachers	8	7.69
Total	104	100.00

Table 1 presented the distribution profile of the participants of the study. As reflected above, there were 96 or 92.31 percent learners and 8 or 7.69 percent teachers being respondents of the study. It has a total of 104 or 100.00 percent respondents.

INSTRUMENT

This section provided sources of data that were used in the study. One was a secondary data that would be gathered through the level of mathematics performance of the learners. The other source of data would be generated using

the survey questionnaire. The researcher utilized this survey tool as means of gathering primary information. The tool would be designed to source out information with regard to the profile of grade one learners, and the adopted tool for the challenges encountered by the teachers in implementing Strategic Intervention Materials in Mathematics in grade one.

Formulation

The researcher would sought permission from the Schools Division Superintendent to utilize the primary data to be used in this study with the assurance of observing data privacy and confidentiality. This secondary data would be taken from office of the school guidance designate on the level of mathematics performance of grade one learners on the RMA results for SY 2024-2025. These would be thoroughly examined, analyzed, and interpreted.

The profile of grade one learners in terms of educational background of parents, combined monthly family income, and number of family members. Other information was level mathematics performance of grade one learners in their RMA results, and the challenges encountered by the teachers in implementing Strategic Intervention Materials in Mathematics in grade one.

Scoring

This part highlighted the figures to be used for analysis and interpretation the following scoring procedures were used. This procedure was to guide the researcher on how to come up with a set of numbers that would serve as the basis in making inferences.

Part 1 was the profile of grade one learners, the researcher was utilized the frequency count and simple percentage.

Part 2 was on the level of mathematics performance of grade two learners, the researcher was utilized the adopted tool from RMA toolkit, (*DM-CT-284, 2024*). The scoring guide was presented as range, category and verbal description.

Range	Category	Verbal interpretation
85 - 100	Highly Proficient (HP)	The learners performed 85% to 100% of the tasks correctly
75 - 84	Proficient (P)	The learners' performed 75% to 84% of the tasks correctly
50 - 74	Nearly Proficient (NP)	The learners' performed 50 % to 74 % of the tasks correctly
25 - 49	Low Proficient (LP)	The learners' performed 25% to 49 % of the tasks correctly
1 - 24	Not Proficient	The learners' performed 1 % to 24 % of the tasks correctly

Part 3 was on the challenges encountered by teachers in implementing Strategic Intervention Materials in Mathematics in grade one., an adapted tools from Bundang, et al (2022). The scoring guide was presented as weight, range, category and verbal description.

Weight	Range	Category	Verbal description
4	3.25- 4.00	Highly Challenging (HC)	The challenges greatly

			affected the performance of teachers.
3	2.50- 3.34	Moderately Challenging(MC)	The challenges affected the performance of the teachers.
2	1.75- 2.49	Slightly Challenging (SC)	The challenges did not affect so much to the performance of the teachers.
1	1.00- 1.74	Not Challenging at All (NCA)	The challenges had no effect to the performance of the teachers.

PROCEDURE

Prior to the administration of the research instrument, the researcher was asked an approval from the head of office and properly endorsed by the PSDS where the research was conducted. A transmittal letter was presented to the school principal by the researcher seeking permission for the conduct of the research activity.

Data Gathering

The researcher personally gathered the primary data that were administered such as profile of grade one learners using the teacher- made questionnaire and were distributed to the grade one learners as the respondents of the study. The level of mathematics performance of grade one learners using RMA tool, before using the SIM and after using the SIM. and the challenges encountered by the teachers' questionnaire was distributed to the teacher-respondents and were tabulated, analyzed, and interpreted afterwards.

Statistical Treatment

The following statistical treatment were used to summarize, analyze and interpret the data gathered from the subjects of the study.

The statistical treatment such as the frequency count and simple percentage, weighted mean, and t-test were used to summarize, compare, analyze and interpret the academic performance of the learners.

Frequency count and Simple percentage. The statistical treatment was used to determine the profile of grade one learners and the level of mathematics performance of grade one learners in RMA results; before and after using SIM.

Weighted mean. The statistical treatment was used to determine challenges encountered by teachers in implementing Strategic Intervention Materials in Mathematics in grade one.

T-test. The statistical treatment was used to determine the significant mean difference between the level of mathematics performance of grade one learners in RMA results; before and after using SIM.

ETHICAL CONSIDERATIONS

This study adhered to stringent ethical standards to ensure the protection and respect of all participants, particularly the young learners and their teachers. Key ethical considerations included:

Protection of Human Rights. The research was conducted with a strong commitment to respecting the rights and dignity of all participants. This included maintaining the confidentiality and privacy of personal data collected from both

students and teachers. Anonymity was assured to prevent any identification of individual participants in the study.

Informed Consent. Prior to the commencement of the study, detailed information about the research objectives, procedures, potential risks, and benefits was provided to all participants. Written consent was obtained from the parents or guardians of the grade 1 learners and the teachers involved in the study. This process ensured that participation was voluntary and based on a clear understanding of the study's purpose.

Non-Maleficence. The study design prioritized the well-being of the participants by avoiding any potential harm. The strategic intervention materials used were thoroughly reviewed to ensure they posed no risk to the learners' physical or psychological health.

Beneficence. The primary goal of the research was to benefit the participants by improving educational practices and outcomes in Mathematics. The findings aim to enhance the teaching and learning experience, thereby contributing positively to the academic progress and skill development of the grade one learners.

Justice. The selection of participants was conducted equitably, ensuring that all grade one learners and their teachers at Gun-ob Elementary School had an equal opportunity to participate in the study. This approach ensured a representative sample and unbiased results.

Confidentiality. All data collected during the study was handled with strict confidentiality. Access to the data was restricted to the researcher and was used

solely for the purposes of the study. Results were reported in aggregate form to prevent the identification of individual participants.

By adhering to these ethical principles, the study aimed to uphold the highest standards of research integrity while contributing valuable insights into the effectiveness of the strategic intervention materials in Mathematics in enhancing mathematical competence among grade one learners.

CHAPTER 4

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presented the data collected based on the variables of the study. Thus, included the presentation, analysis, interpretation and connected readings. Data included the profile of grade one learners, their level of mathematics performance before and after using SIM, the difference of performance, and the challenges encountered by the teachers.

PROFILE OF GRADE ONE LEARNERS

This section a short description of the profile of grade one learners in terms of their educational background of parents, combined monthly family income, and number of family members. It provides a detailed overview of the individual involved in this study.

The profile of grade one learners was presented using the frequency count which were expressed in percent. This data was presented in the Table 2.

Educational Background of Parents

Table 2 showed the profile of the grade one learners as to educational background of parents. The data revealed that majority of the parents (57 or 59.37 percent were high school graduates, the second highest number were 17 or 17.71 percent had reached college level, the third in rank were 12 or 12.50 percent who were college graduates, and the least number of parents were 10 or 10.42 percent where at high school level.

Table 2*Profile of Grade One Learners; (n= 96)*

Indicators	Frequency (f)	Percent (%)
Educational Background of Parents		
College graduate	12	12.50
College level	17	17.71
High school graduate	57	59.37
High school level	10	10.42
Total	96	100.00
Combined Family Monthly Income		
More than 30,000	3	3.13
25,001 - 30,000	3	3.13
20,001-25,000	4	4.16
15,001-20,000	14	14.58
10,001-15,000	50	52.08
Below 10,000	22	22.92
Total	96	100.00
Number of family members		
More than four	13	13.54
Four children	46	47.92
Three children	12	12.50
Two children	16	16.67
Only one child	9	9.37
Total	96	100.00

The findings imply that majority of parents are high school graduates. This suggests that many parents may have faced barriers in seeking financially rewarding job to sustains financial obligation for their children to pursue to higher

education. This data can also be used by the school to tailor parents engagement, collaboration, and participate to the activities, workshop and learning support activities to promote lifelong learning and involvement in their children's education.

As conformed by the study of Li and Zhan, (2023), "pointed out that the higher the education of parents, the higher the educational expectations of parents for their children's academic performance, and that more educated parents are more inclined to use a variety of engagement strategies at home and at school to foster their children's academic performance. Therefore, it can be believed that parents with higher education know more about scientific parenting methods, teach their children according to their aptitude, and also create a more harmonious family atmosphere to make their children better", (Li & Zhan, 2013).

As supported by the study of Yanti, et.al. (2024), discussed "that the support of parents creates a more conducive learning environment at home, which ultimately positive impacts learners' behavior at school, regardless of the qualification of the school. Moreover, the role of parents' educational background also influences learners' perceptions of the importance of education. Children with highly educated parents often have a stronger intrinsic motivation to learn because they grow up in an environment that values education".

Combined Family Monthly Income

Table 2 showed the profile of the grade one learners as to combined monthly family income. The data revealed that majority of parents with the combined monthly family income were 50 or 52.08. percent ranging from

(10,001-15,000), the next highest number of parents were 22 or 22.92 percent ranging below 10,000, and the least number of parents were 3 or 3.13 percent ranging from 25,001 -30,000, and more than 30,000.

The findings implies that most of the families belongs to low socio-economic status. This findings can be detrimental to the learner access to educational resources, proper nutrition and well-being of their children, and learners at risk of dropping out and limited participation of parents to the school activities. Further, suggests to the school officials the importance of implementing support mechanism to strengthen the school feeding targeted to the severely wasted learners to help address educational circumstances influenced by economic constraints.

Accordingly, Kuru and Taskin (2016) study, “parents from different socio-economic backgrounds do not have very different ideas about the process of involvement in the process of education. However, because school-family interaction in public schools and the trainings on parenting are not very systematic even if socio-economic status is high, the interaction is not at a desired level. Moreover, it was found out that parents having a good socio-economic status were more willing and active in the procedure of participating in the process of education”, (Kuru & Taskin, 2016).

Number of Family Members

Table 2 likewise showed the profile of the grade one learners as to numbers of family members. The data revealed that majority of parents with the number of family members were 46 or 47.92 percent with four children, the

second highest number of family members were 16 or 16.67 percent with two children, and the least number of parents were 9 or 9.37 percent with only one child.

The findings imply that the greater number of children in the family may face greater demands in term of providing daily expenses, educational needs, and well-being of their children. Further implies that the resources are limited for a large family, a difficulty in providing quality education, health care and the basic needs of the family. With this implication, school officials are encouraged to strengthen the school program that focus on educational impact, family planning awareness and participation of parents to school programs and projects.

As revealed by Zedan (2011), he claimed that the higher the number of children in a family, the lower were the factors of monitoring, support, and encouragement. Participation in group activities, contact with teachers, as well as involvement became less. This was the case with parents and their sons, but he found out that there was an even greater - negative correlation between the number of children in a family and general involvement of parents and their daughters.

LEVEL OF MATHEMATICS PERFORMANCE OF GRADE ONE LEARNERS

This portion presented the data on the level of mathematics performance of grade one learners utilizing the RMA tool before and after using the SIM. The level of mathematics performance of the learners categorized as highly proficient, proficient, nearly proficient, low proficient and not proficient.

The level of mathematics performance of the learners was presented using the frequency count which were expressed in percent. This data was presented in the Table 3.

Table 3

Level of Mathematics Performance of Grade One Learners; (n=96)

Category	Before Using SIM (f)	Using SIM (%)	After Using SIM (f)	Using SIM (%)
Highly Proficient (HP)	0	0.00	11	11.46
Proficient (P)	3	3.13	13	13.54
Nearly Proficient (NP)	35	36.46	51	53.13
Low Proficient (LP)	45	46.88	20	20.83
Not Proficient at All (NPA)	13	13.54	1	1.04
Total	96	100.00	96	100.00

Before Using SIM

This section presented the level of mathematics performance of grade one learners before using SIM in the diagnostic test results. The data revealed that majority of the learners were 45 or 46.88 percent classified as low proficient, next highest number of learners were 35 or 36.46 percent classified as nearly proficient, the third number of learners were 13 or 13.54 percent classified as not proficient at all, and the least number of learners were 3 or 3.13 percent classified as proficient.

The findings imply that almost one-thirds of the learners were performing at nearly proficient and the rest are low proficient. With this, suggesting that the

instructional strategies, method of teaching, and learning approaches were largely effective in engaging and challenging to most of learners. Further, implies that most of the learners meeting the standards and need to push towards the higher performance by giving an opportunity for improving instruction to address the gap, providing extensive tasks, introducing the strategic intervention materials (SIMs) and peer mentoring for those who were not able to reach the proficiency and or highly proficient performance.

As supported by the study of Dumigsi and Cabrella (2019), it is found out “that the pretest result indicated the learners have poor academic achievement scores. The results suggest for interventions that will aid the improvement of the learners’ academic performance”, (Dumigsi & Cabrella, 2019).

After using SIM

This section presented the level of mathematics performance of grade one learners after using SIM in the post- test results. The data revealed that majority of the learners were 51 or 53.13 percent classified as nearly proficient, next highest number of learners were 20 or 20.83 percent classified as low proficient, the third number of learners were 13 or 13.54 percent classified as proficient, the fourth number of learners were 11 or 11.46 percent classified as highly proficient, and the least number of learners were 1 or 1.04 percent classified as not proficient at all.

These findings imply that the increase in number of learners with nearly proficient, proficient and highly proficient performance suggests that the use of the strategic intervention materials (SIM) in teaching mathematics was effective.

The teaching methods, curriculum, and interventions implemented successfully helped learners develop their skills. It is also evident that the use of the SIM or remedial program were put in place to address gap, their success is evident in improved EOSY results. It is also highlighting the success of the efforts made to improve mathematics performance in early grades and provides a solid foundation for continued academic growth and success.

As conformed by the study of Dumigsi and Cabrella, (2019), they concluded “that utilizing strategic intervention material can help improve the scholastic performance of the learners in mathematics by incorporating SIM to the delivery of the lessons with least mastery develops the mathematical skills. Further, stressed that the intervention material assists learners to develop the fundamental knowledge, skills and understanding in mathematics and aid them in the transfer of learning”, (Dumigsi & Cabrella, 2019).

*SIGNIFICANT MEAN DIFFERENCE IN MATHEMATICS GRADE ONE
LEARNERS BEFORE AND AFTER USING STRATEGIC INTERVENTION
MATERIALS(SIM)*

To test the effectiveness of the Strategic Intervention Materials (SIM) in teaching the grade one learners, the t-test of the difference of the means scores was used. The results were shown in Table 4.

The results of the t-test of the mean difference in the grade one mathematics performance before and after using the strategic intervention materials (SIM) suggested that there was a significant difference in the results.

The computed t-value of 2.36 is greater than the critical value of 1.593 (an interpolated value). This means that there was a significant difference between the means scores in the BOSY and EOSY results.

Table 4

Significant Mean Difference in the Mathematics Performance of Grade One Learners Before and After Using Strategic Intervention Materials [SIM], (n=96)

Terms	Mean	Difference	SD	Computed t	Critical t	Decision	Interpretation
Beginning of School Year (BOSY) , Before SIM	15.19		11.28				
		11.86		2.36	1.593	Reject Ho	Significant
End of School Year (EOSY), After SIM	27.05		8.67				

The findings imply that the test suggested that the strategic intervention materials used were effective in improving the performance of the grade one learners at Gun-ob Elementary School in Lapulapu City Division during the school year 20 24-2025.

The findings of this study paralleled to the research conducted by Dumigsi and Cabrella (2019) , which revealed that the use of SIM is more effective in teaching mathematics subjects. Further, showed that the use of SIM gave a significant improvement in learners academic achievement.

The result of the study is in accord to the result of the study conducted by Leopardas, et.al., (2020), indicated that there is significant difference the pretest performance learners was attributed to the utilization of SIM that made the

learners gained significant learning, thus improving their performance. Further, suggests that to achieve higher academic achievement and mastery of the lesson, the SIM be adopted as instructional materials for teaching mathematics.

CHALLENGES ENCOUNTERED BY THE TEACHERS

This section presented the challenges met by the teachers in implementing strategic intervention materials in teaching mathematics to grade one learners. The data presented in categorical four-Likert scale and expressed in weighted mean. The data was presented in Table 5.

Table 5

*Challenges Encountered by the Teachers
;(n=8)*

Indicators	Weighted mean	Interpretation	Rank
Limited resources and materials	3.88	HC	2
Time constraint	3.88	HC	2
Insufficient training and professional development	3.75	HC	4
Appropriate and accurate implementation of SIM	2.63	MC	6
Alignment of SIM with the teaching competencies	2.13	SC	8.5
Learners' diversity	2.13	SC	8.5
Lack of collaboration among teachers in SIM usage	3.5	HC	5
Technological barriers	2.5	MC	7
Monitoring and assessment difficulties	3.88	HC	2

Legend

Weight	Range	Category
4	3.25 - 4.00	Highly Challenging (HC)
3	2.50 - 3.24	Moderately Challenging (MC)
2	1.75 - 2.49	Slightly Challenging (SC)
1	1.00 - 1.74	Not Challenging at All (NCA)

Challenges Encountered by the Teachers

This section presented the challenges met by the teachers in teaching mathematics to grade one learners using SIM. The data revealed five of the indicators were highly challenging (HC), two were slightly challenging (SC), and two of which were moderately challenging (MC). The three indicators were "Limited resources and materials, time constraints, and monitoring and assessment difficulties" had tied rated as highly challenging (HC) with the weighted mean of 3.88. The fourth challenging indicator which concerns "Insufficient training and professional development" was ranked fourth among the indicators and was interpreted as highly challenging with the weighted mean of 3.75, and the least challenging indicators (ranked 8.5) was "Alignment of SIM to teaching competencies, and Learners' diversity" there were rated as slightly challenging with the weighted mean of 2.13.

The findings imply that highlighted the limited resources and materials, time constrained, and monitoring and assessment difficulties are highly challenging area in improving mathematics performance of the learners. The results suggest a strong need for school management support and enhance the strategic intervention materials (SIM) implementation in all core subject areas. In addressing the gaps, prioritize the provision of adequate teaching aids and

integration of technology in teaching, promote time management in planning the workloads of teachers so that teachers have ample time for their remedial teaching, and implement effective assessment strategies and approaches by utilizing the previous data in improving assessment techniques.

Furthermore, findings imply that improving instructional materials, giving teachers additional chances for professional growth, and resolving equipment and assessment difficulties, the school management may also allocate funds from the school MOOE. With this, it will boost the teachers' morale, and ultimately enhancing learners' performance. In addition, school heads should focus on remediation programs and instructional intervention plans particularly, constructing SIM not only limited to least mastered skills but all covered by the lesson.

Sinco (2020), "concluded that the pre-test performance of the learners before using the SIMs does not meet the 75 percent standard criterion and the post-test performance of the learners after using the SIMs meets the standard criterion of 75 percent and generally classified in the satisfactory level. Further, findings revealed that there is a significant difference between the pre-test and post-test performance of the learners in math concept. The difference is attributed to the use of SIMs in learning science concepts competency", (Sinco, 2020).

Segarino, et al (2022), concluded in the findings of their study, using a controlled and experimental groups. The findings showed "that both groups had considerable mean improvement from the pretest to the posttest, demonstrating

the critical role that SIM play in teaching and learning process”, (Segarino, et al. 2022).

OUTPUT

AN ENHANCEMENT PLAN

Rationale

According to Calungsod (2019), Strategic Intervention Material [SIM] gives structured and learner-centered activities that will help struggling learners specifically in teaching the competencies in Mathematics. SIM serves as remediation tool or an enhancement tool in teaching the least-mastered skill. Several researches claimed that Mathematics is a subject where most learners find difficulties, thus needs more visuals, real-life examples, and simplified explanation for the learners to grasp the topic discussed. This study focused on the usage of SIM in Mathematics and how it affected the performance of Grade One learners. Findings of the study revealed that there was a significant increase in the performance of the Grade One learners after using SIM in Mathematics. Hence, this enhancement plan is designed to intensify SIM usage as enhancement or remediation tool.

Objectives:

This enhancement plan is humbly proposed for the purpose of strengthening the usage of Strategic Intervention Material [SIM] in teaching Mathematics. Herein are the specific objectives:

1. Design a strategic enhancement tool in Mathematics based on the identified least-mastered skill;
2. Familiarize the parts of Strategic Intervention Material [SIM]; and
3. Conduct validation on teacher-made enhancement tool that can be utilized in teaching least-mastered skill in Mathematics.

Scheme of Implementation

The implementation will be divided into three phases which include the pre-implementation phase, proper implementation phase, and post-implementation phase.

Pre-implementation Phase. The following strategies are to be undertaken in preparation of the proper implementations of the proposed enhancement plan:

- a. Presentation of the proposed enhancement plan to the school and district level for review and possible alignment and approval.
- b. Discuss the different strategies in the plan.
- c. Discussion of the financial requirements of the plan to ensure smooth implementation of the program.
- d. Conduct consultations with the school head and other DepEd officials to ensure the support and collaboration in the realization of the plans
- e. Conduct proper channeling and coordination to ensure mobilization and leveling off of the deliverables and expectation among the teachers and other stakeholders of the school
- f. Make sure that the plan has been approved by the proper authorities to ensure continuity of the implementation of the activities and strategies.

Proper Implementation Phase. The following activities are suggested to carry out during the implementation phase:

- a. Ensure that every detail of the proposed enhancement plan is promptly implemented.
- b. Continuously monitor and evaluate the progress of the implementation.
- c. Giving of feedback will be initiated.
- d. Collaborate with the other members of the school organization who are part of the implementation of the program.
- e. Constant and continuous implementation for improvement.

Post-implementation Phase. The following were the guides in the post implementation, namely:

- a. Ensure that proper evaluation standards are identified during the pre-implementation phase and are religiously observed and followed.
- b. Provide feedback about the concerns, issues, gaps, and problems during the implementation.
- c. Maintain communication among and between stakeholders of the program.

Matrix of Implementation

Areas of Concern	Objectives	Strategies/Activities to be undertaken	Persons Involved	Materials / Resources Needed	Time Frame	Budgetary Requirement	Source of Fund	M&E Indicators	MOV s
Needs Assessment	Identify the least - mastered skill in Mathematics by quarter.	*Utilize data on needs assessment for decision-making on goal development *Exhibit the value of data-based shared decision-making (FGD)	Teacher Master Teacher School Head Learners	Curriculum Guides Curriculum Mapping List of Least-Mastered Skills	Every end of the quarter	500	MO OE	Sample output on data-based decision making List of Least-Mastered Skills	List of Identified Least-Mastered Skills in Math; Attendance during FGD
Availability of resources	To design a strategic intervention material that is aligned in the curriculum	Focus -Group Discussion Conduct LAC Session *Exhibit collaboration in crafting the desired tool	Facilitated Team Learning with Internal Resource Person	* laptop *Smart TV *meta cards *marking pens *bond papers	Every end of the quarter	2000	MO OE	Teachers will be able to design SIM	Attendance Narrative report Photos Sample output
SIM Familiarization	To conduct orientation on SIM -making	LAC Session	Facilitated Team Learning with External Resource Person	* laptop *Smart TV *meta cards *marking	Anytime of the school year	1000	MO OE	Teachers will be able to design SIM	Attendance Narrative report Photos

				pens *bond papers					Sample output
Ways to provide opportunities for teachers to share their significant learnings from in-service trainings with other teachers	Collaborative Expertise In-service training	*Enumerate possible ways of sharing significant insights/realizations of teachers from their attendance to in-service trainings with co-teachers *Manifest sincerity in coming up with these various ways	Facilitated Team Learning with External Resource Person	* laptop *Smart TV *meta cards *marking pens *bond papers	Whole year round	500	MO OE	List of strategies and approaches	Attendance Narrative report Photos Sample output

CHAPTER 5

SUMMARY, FINDINGS, CONCLUSION, AND RECOMMENDATION

This section presented the summary, findings, conclusion, and recommendation. Thus, it emphasized the implementation of an intervention plan as the output of the study.

SUMMARY

This section summarized the main idea of the study. This provided the research road map how this study was realized to undergo so that the researcher was able to capture the whole context of scholarly work.

This study determined the profile of the grade one learners in terms of educational background of the parents, combined family monthly income, and number of family members; the level of mathematics performance of Grade 1 learners using the RMA tool; before and after using SIM; a significant difference in Mathematics performance of grade 1 learners before and after using Strategic Intervention Material, and challenges encountered by the teachers in implementing Strategic Intervention Material in Mathematics for grade one learners.

There was a total of 104 respondents composed of eight teachers and 96 learners who were participants in this study. A descriptive method was used in this study. The gathering of data undergone the statistical treatment such as frequency count and simple percentage, t-test, Chi-square, weighted mean and rank. This statistical treatment was used to obtain the conclusion based on the

findings of the interpretation of data. Thus, the output of this study was an intervention plan.

FINDINGS

The following findings were obtained based on data gathered, statistically analyzed, and interpreted.

Profile of Grade One Learners

The profile of grade one learners in terms of their educational background of parents, combined monthly family income, and number of family members.

Educational Background of Parents. The data revealed that majority of the parents (57 or 59.38 percent) were high school graduates, the second highest number were 17 or 17.71 percent had reached college level, the third in rank were 12 or 12.50 percent who were college graduates, and the least number of parents were 10 or 10.52 percent where at high school level.

Combined Family Monthly Income. The data highlighted that majority of parents with the combined monthly family income were 50 or 52.08. percent ranging from (10,001-15,000), the next highest number of parents were 22 or 22.92 percent ranging below 10,000, and the least number of parents were 3 or 3.13 percent ranging from 25,001 -30,000, and more than 30,000.

Number of Family Members. The data provided that majority of parents with the number of family members were 46 or 47.92 percent with four children, the second highest number of family members were 16 or 16.67 percent with two

children, and the least number of parents were 9 or 9.37 percent with only one child.

Level of Mathematics Performance of Grade One Learners

The level of mathematics performance of grade one learners utilizing the RMA tool before and after using the SIM.

Before Using SIM. The data presented that majority of the learners were 45 or 46.88 percent classified as low proficient, next highest number of learners were 35 or 36.46 percent classified as nearly proficient, the third number of learners were 13 or 13.54 percent classified as not proficient at all, and the least number of learners were 3 or 3.13 percent classified as proficient.

After using SIM. The data revealed that majority of the learners were 51 or 53.13 percent classified as nearly proficient, next highest number of learners were 20 or 20.83 percent classified as low proficient, the third number of learners were 13 or 13.54 percent classified as proficient, the fourth number of learners were 11 or 11.46 percent classified as highly proficient, and the least number of learners were 1 or 1.04 percent classified as not proficient at all.

Significant Mean Difference in Mathematics One Learners Before and After Using Strategic Intervention Material (SIM)

To test the effectiveness of the Strategic Intervention Materials (SIM) in teaching for grade one learners, the t-test of the difference of the means scores was used. The results of the t-test of the mean difference in the grade one mathematics performance before and after using the strategic intervention

materials (SIM) suggested that there was a significant difference in the results. The computed t-value of 2.36 is greater than the critical value of 1.593 (an interpolated value). This means that there was a significant difference between the means scores in the BOSY and EOSY results.

Challenges Encountered by the Teachers in Implementing Strategic Intervention Material in Teaching Mathematics to Grade One Learners

The data highlighted five of the indicators were highly challenging (HC), two were slightly challenging (SC), and two of which were moderately challenging (MC). The three indicators were "Limited resources and materials, Time constraints, and monitoring and assessment difficulties had tied rated as highly challenging (HC) with the weighted mean of 3.88. The fourth challenging indicator which concerns "Insufficient training and professional development" was ranked fourth among the indicators and was interpreted as highly challenging with the weighted mean of 3.75, and the least challenging indicators (ranked 8.5) was "Alignment of SIM to teaching competencies, and Learners' diversity" there were rated as slightly challenging with the weighted mean of 2.13.

CONCLUSION

Based on the findings of this study, it is concluded that the level of mathematics performance of grade one learners utilizing the RMA tool before and after using the SIM, there is an increase in number of learners with nearly proficient, proficient and highly proficient performance. The result suggests that the use of the strategic intervention materials (SIM) in teaching mathematics is

effective. It is also highlighting the success of the efforts made by the teachers to improve mathematics performance in early grades and provides a solid foundation for continued academic growth and success. In addition, finding also revealed that there is a significant difference between the means scores in the before using SIM (BOSY) and after using SIM (EOSY) results. Moreover, there is a need to address these challenges that highlighted the limited resources and materials, time constrained, and monitoring and assessment difficulties are highly challenging area in improving mathematics performance of the learners. The result suggests a strong need for school management support and enhanced the strategic intervention materials (SIM) implementation in all core subject areas. In addressing the gaps, prioritize the provision of adequate teaching aids and integration of technology in teaching, promote time management in planning the workloads of teachers so that teachers have ample time for their remedial teaching, and implement effective assessment strategies and approaches by utilizing the previous data in improving assessment techniques.

RECOMMENDATION

Based on the findings and conclusions of this investigation, it is hereby recommended that the enhancement plan may be implemented. For the reason that, it may help improve the level of mathematics performance for grade one learners, and at the same time the learning gaps can be addressed strategically.

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APPENDICES

APPENDIX A₁

SDS APPROVED PERMIT TO CONDUCT RESEARCH



Republic of the Philippines
Department of Education
 REGION VII – CENTRAL VISAYAS
 Division of Lapu-Lapu City



6003963

Office of the Schools Division Superintendent

May 30, 2025

MARICHE B. PESIAO
 Researcher
 Felipe R. Verallo Memorial Foundation, Inc.

Madam:

Greetings!

This letter serves as confirmation of your request for permission to conduct a research study titled '**Strategic Intervention in Mathematics for Grade One Learners: An Enhancement Plan**' at Gun-ob Elementary School in our division.

Your request has been forwarded to the district supervisor and school principal for their consideration. They will evaluate your proposal based on the following criteria:

- Compliance with ethical standards
- Protection of participant confidentiality and privacy
- Adherence to prescribed public health standards and community protocols
- Observance of DepEd Order No. 9, s. 2005 ("No Disruption of Classes Policy") and other relevant DepEd policies

We appreciate your commitment to sharing the findings and results of your study with the division/school head of the identified school. Please ensure that a copy of your completed study is provided for future reference.

Thank you for your interest in conducting research in our division.

Very truly yours,

MARILYN S. ANDALES EdD, CESO V
 Schools Division Superintendent

MSA/SGOD/RQV/JPD





B.M. Dimataga St., Poblacion, Lapu-Lapu City, Cebu

☎ (032) 520-4420; ☎ (032) 520-4421; ✉ deped.lapulapu@deped.gov.ph;
 DepEd Lapu-Lapu City Division; 🌐 <https://depedapulapu.net.ph>

APPENDIX A₂

TRANSMITTAL LETTER FOR THE SCHOOL PRINCIPAL

Republic of the Philippines
Department of Education
Region VII, Central Visayas
Division of Lapu-Lapu City
B.M. Dimataga St., Poblacion, Lapu-Lapu City
District VI
Gun-ob Elementary School

May 2, 2025

MS. ARLENE T. SUMALINOG
Principal II
Gun-ob Elementary School
Gun-ob, Lapu-Lapu City

Madam:

Greetings!

I would like to ask permission from your good office to conduct my study entitled "Strategic Intervention Materials in Mathematics for Grade One Learners: An Enhancement Plan" in our respective school specifically the selected Grade 1 learners. This is in connection with my partial fulfillment of the Degree Master of Arts in Education Major in Administration and Supervision at FELIPE R. VERALLO MEMORIAL FOUNDATION, INC., Clotilde Hills, Dakit, Bogo City.
I am looking forward to your favorable action to this request.

Thank you and God bless.

Respectfully yours,

MARICEL B. PESIAO
Researcher

Noted:

AGAPITO P. PINO JR., D.M.
Adviser

Approved:

MS. ARLENE T. SUMALINOG
Principal II

**A QUESTIONNAIRE ON STRATEGIC INTERVENTION MATERIALS IN
MATHEMATICS FOR GRADE ONE LEARNERS:
AN ENHANCEMENT PLAN**

To The Respondent:

The researcher is a postgraduate student of Felipe R. Verallo College, Inc. Dakit, Bogo City, Cebu taking up Master of Arts in Education major in Administration and Supervision. She is currently on the process of completing her research paper entitled, " *Strategic Intervention Materials in Mathematics for Grade One learners: An Enhancement Plan*"

In this connection, the researcher would like to respectfully ask for your permission to allow her to conduct her study with you. Rest assured that the data gathered will be treated with utmost confidentiality. The superintendent has granted permission for this research study.

Your response to this request will be a valuable contribution to the success of the study and will be highly appreciated.

Thank you very much for your cooperation.

Researcher

General Directions: Do not write your name on this questionnaire. Kindly answer each question based on your facts. Rest assured that your answers will be off the record. Your participation is entirely voluntary and highly appreciated. If there are items you do not feel comfortable in answering, just skip it.

PART 1: PROFILE OF GRADE ONE LEARNERS

Directions: For each question, please select only one answer. If more than one answer is true for you, please select the answer that fits best.

1. Highest Educational Attainment

- ☐ Post Graduate
- ☐ College Graduate
- ☐ College Level
- ☐ High School Graduate
- ☐ High School Level
- ☐ Elementary Graduate

- ☐ Elementary Level
- ☐ Not Attended School

2. Combined family monthly income

- ☐ More than P30,000.00
- ☐ P25,001.00 – P30,000.00
- ☐ P20,001.00 – P25,000.00
- ☐ P15,001.00 – P20,000.00
- ☐ P10,001.00 – P15,000.00
- ☐ Below P10,000.00

3. Number of Family Members

- ☐ More than four children
- ☐ Four children
- ☐ Three children
- ☐ Two children
- ☐ One child

PART II. LEVEL OF MATHEMATICS PERFORMANCE. Adopted (RMA Toolkit , DM-CT-284, 2024)

RAPID MATHEMATICS ASSESSMENT [RMA] Grade 1

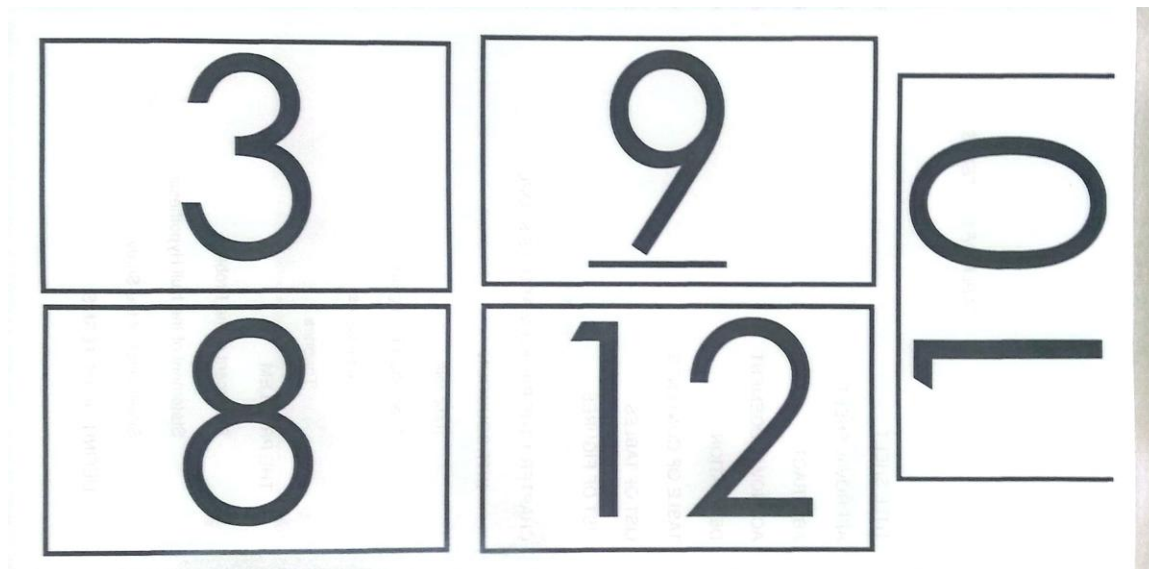
About this Learner's Booklet

This Learner's Booklet is an accompanying material for the Teacher's Booklet. It is prepared to ensure that all learners taking the test use the same set of materials. Most tasks require learners to write their answers in this booklet. To make the booklet reusable, we suggest laminating it.

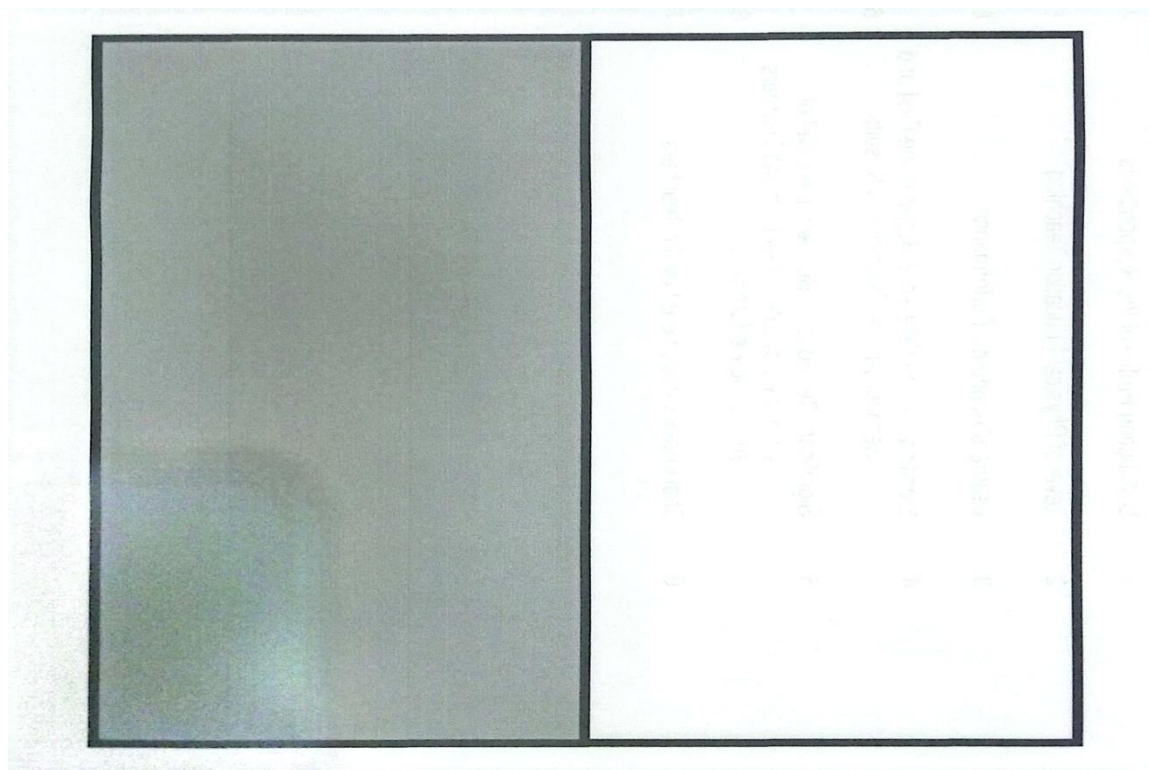
Before test administration, the test administrator should prepare all necessary materials and read the accompanying Teacher's Booklet. It is expected that he/she has gained familiarity with the tasks and materials, understanding how and for which item to use them.

This Rapid Mathematics Assessment Toolkit for Grade 1 was developed by the University of the Philippines National Institute for Science and Mathematics Education Development and the Research Triangle Institute International under the ABC+: Advancing Basic Education in the Philippines program. This endeavor supports the Department of Education's National Mathematics Program and is funded by the United States Agency for International Development.

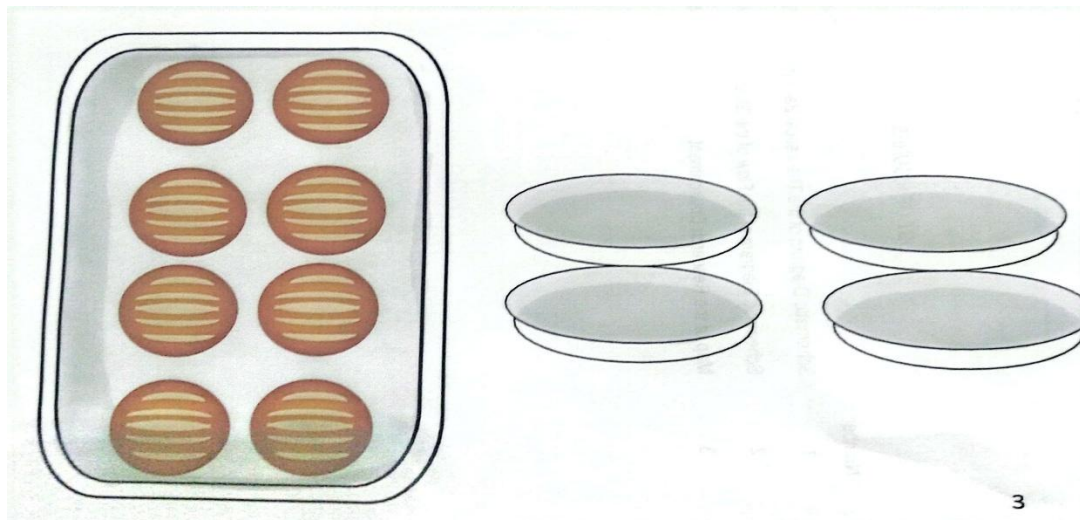
Task A. Number Identification and Discrimination



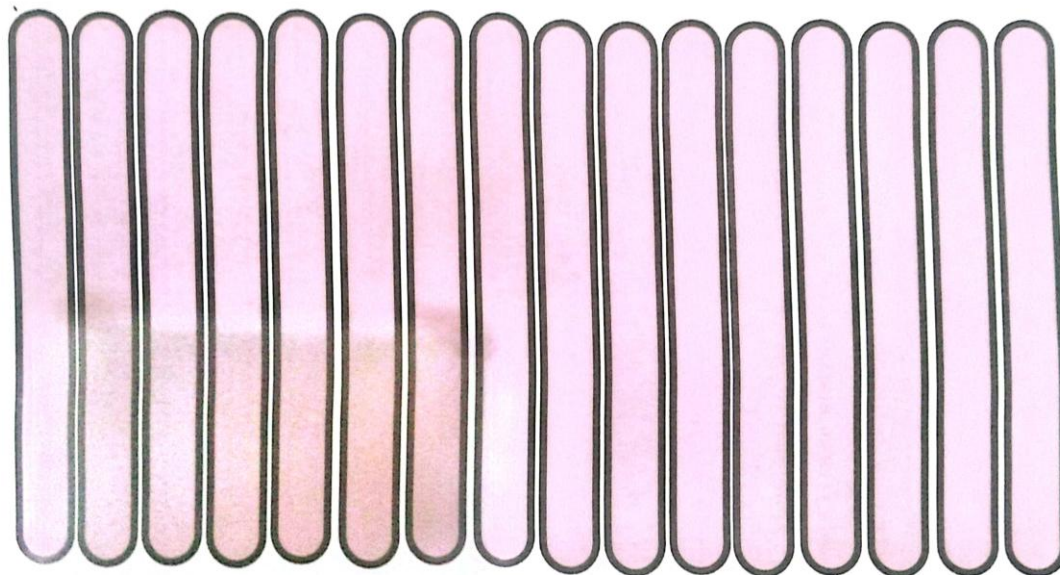
Task B. Fraction

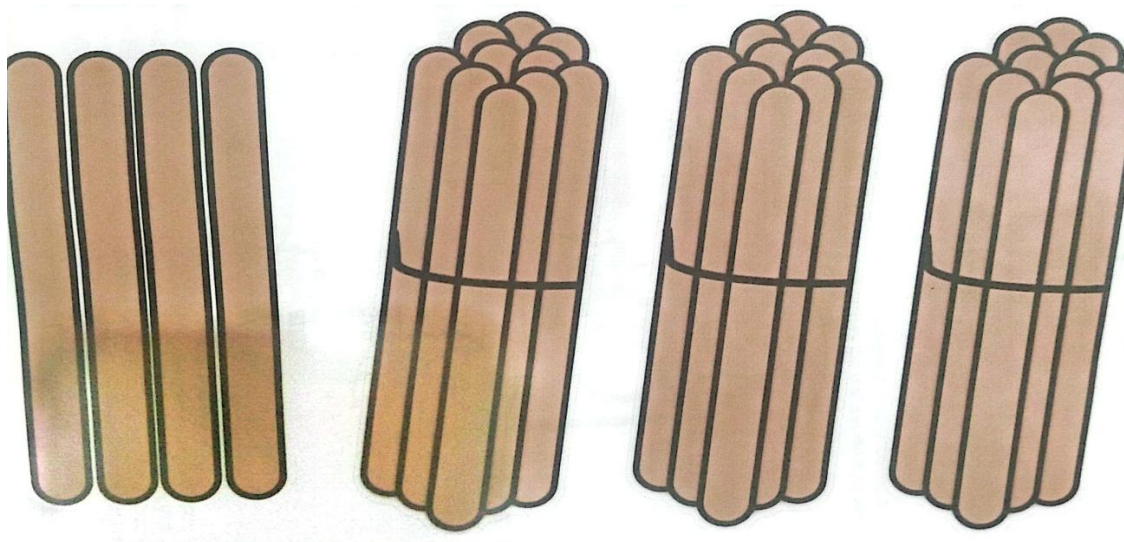


Task B: Fraction



Task C: Addition



Task C: Addition*Task C: Addition*

3. Write the sum.

a)

$$\begin{array}{r} 11 \\ + 3 \\ \hline \end{array}$$

Task C: Addition

3. Write the sum.

b)

$$\begin{array}{r} 15 \\ + 21 \\ \hline \end{array}$$

Task D: Subtraction

2. Write the difference.

a)

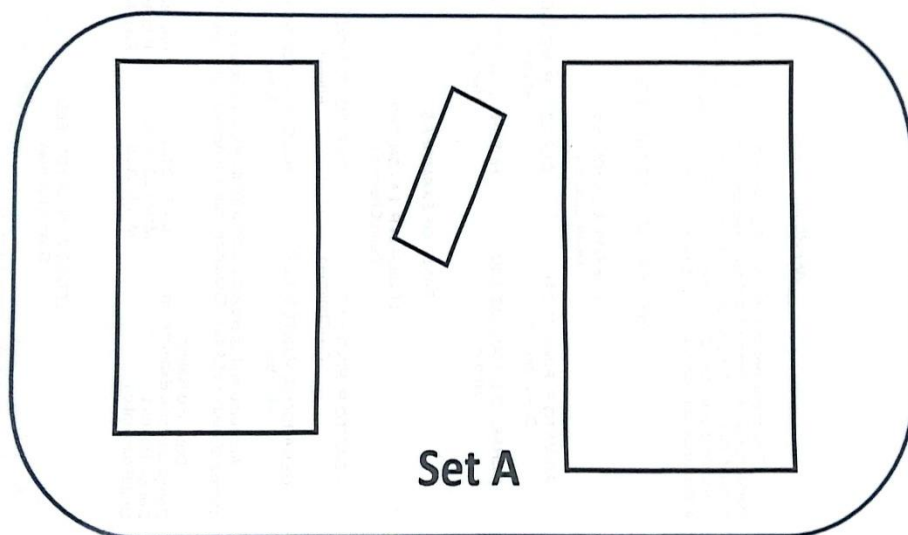
$$\begin{array}{r} 12 \\ - 2 \\ \hline \end{array}$$

Task D: Subtraction

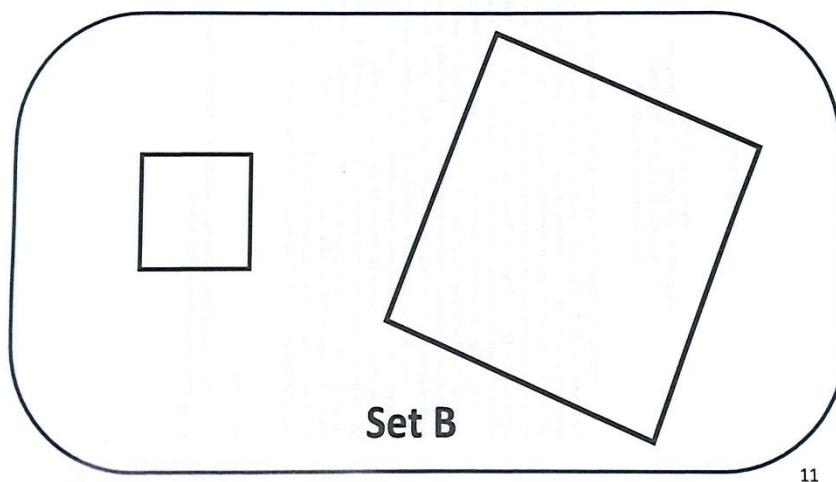
2. Write the difference

b)

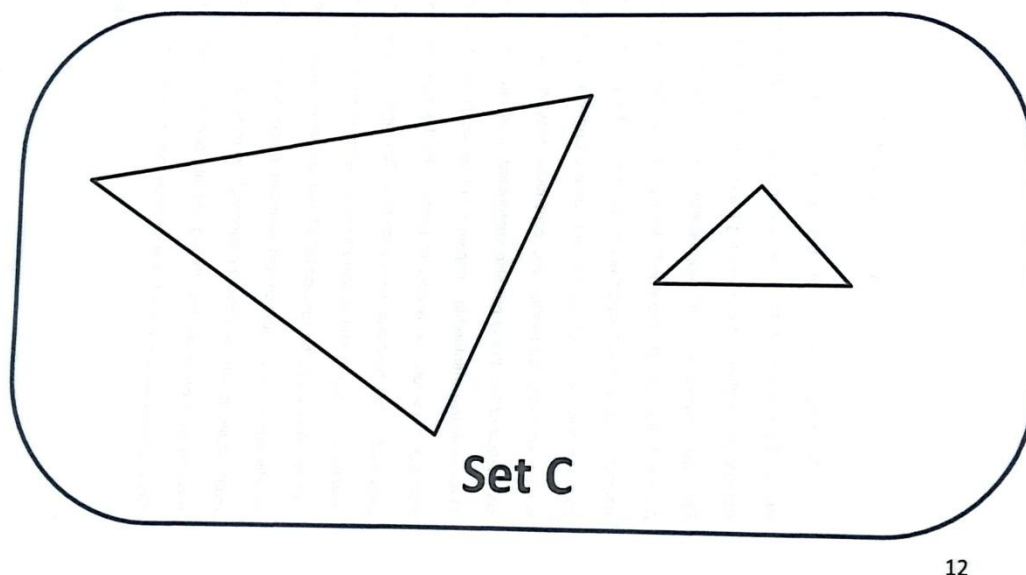
$$\begin{array}{r} 25 \\ - 10 \\ \hline \end{array}$$

Task E: Geometric Representation

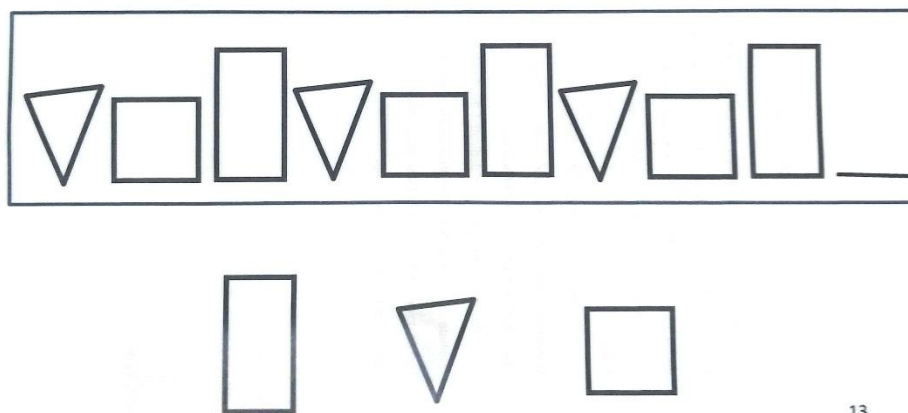
Task E: Geometric Representation



Task E: Geometric Representation

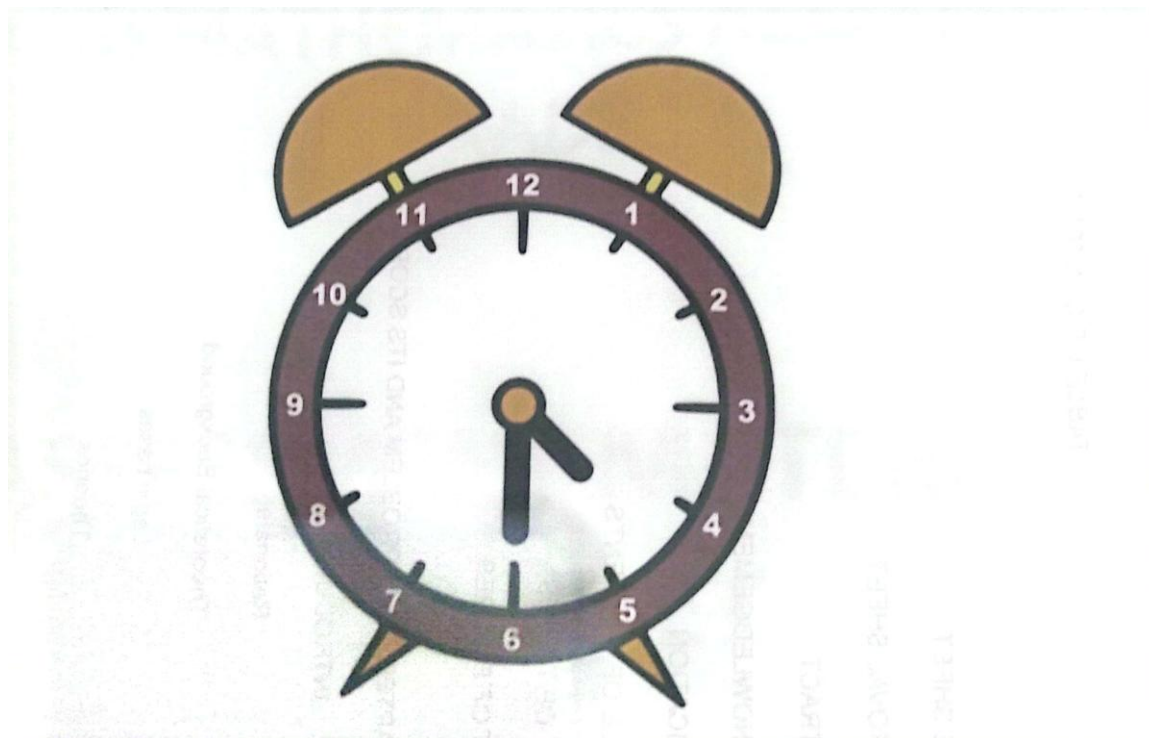


Task F: Missing Shape in Patterns



13

Task G: Time Measurement



PART IV: CHALLENGES ENCOUNTERED BY THE TEACHERS. Adopted, (Bundang, et al, 2022)

Directions: Read each statement carefully. Put a check (✓) on the corresponding column of your choice.

Weight	Range	Category	Verbal description
4	3.25- 4.00	Highly Challenging (HC)	The challenges greatly affected the performance of teachers.
3	2.50- 3.34	Moderately Challenging(MC)	The challenges affected the performance of the teachers.
2	1.75- 2.49	Slightly Challenging (SC)	The challenges did not affect so much to the performance of the teachers.
1	1.00- 1.74	Not Challenging at All (NCA)	The challenges had no effect to the performance of the teachers.

<i>Indicators</i>	HC (4)	MC (3)	SC (2)	NCA (1)
Limited resources and materials				
Time constraint				
Insufficient training and professional development				
Appropriate and accurate implementation of SIM				
Alignment of SIM with the teaching competencies				
Learners' diversity				
Lack of collaboration among teachers in SIM usage				
Technological barriers				
Monitoring and assessment difficulties				

APPENDIX C

A PARENTAL CONSENT GIVEN TO THE PARENTS OF SELECTED GRADE ONE LEARNERS

Ako si _____, ginikanan/magbalantay ni

(Ngalan sa ginikanan/magbalantay)

_____ nga anaa sa _____

(Ngalan sa tinun-an)

(Gr. & Sec.)

nagtugot nga mamahimong gamiton ang iyang score sa RMA alang sa gihimo
nga study ni Mariche B Pesiao nga mao ang “STRATEGIC INTERVENTION
MATERIALS IN MATHEMATICS 1 FOR GRADE ONE LEARNERS: AN
ENHANCEMENT PLAN”.

(Ngalan ug Pirma sa Ginikanan/ Magbalantay

Ug Petsa)

CURRICULUM VITAE

CURRICULUM VITAE



Mariche B. Pesiao
Babag, Lapu-Lapu City, Cebu
0960-673-2853
pesiaomariche1213@gmail.com

Personal Background

Date of Birth	:	December 13, 1983
Place of Birth	:	Lapu-Lapu City, Cebu
Citizenship	:	Filipino
Civil Status	:	Married
Spouse's Name	:	Orlan L. Pesiao
Parents	:	Rogelio B. Berdin Marina B. Berdin

Educational Background

Course	School	Address	Date
Master of Arts in Education Major in Administration And Supervision	Felipe R. Verallo Found., Inc	Dakit, Bogo City	2023 - present
Bachelor of Elementary	Cebu Normal	Cebu City	2004

Education	University		
Secondary	St. Alphonsus Catholic School	Lapu-Lapu City	2000
Elementary	St. Alphonsus Catholic School	Lapu-Lapu City	1996

Eligibility

Title of the Exam License Professional Teacher	Rating	Place of Exam	Date
	78.60	University of the Visayas	8-29-2004

Work Experience

Position	Institution	Address	Inclusive Dates
Permanent Teacher	Gun-ob Elementary School	Gun-ob, Lapu-Lapu City	July 26, 2005 to present

Trainings and Seminars Attended

Title	Sponsoring Agency	Venue	Date
School-Based INSET	DepEd	Gun-ob Elementary School	Oct. 2024
MATATAG Curriculum Training	DepEd	Marigondon Elementary School	May 2024

SIMILARITY CHECK RESULT



CEBU ROOSEVELT MEMORIAL COLLEGES
Center for Research and Development
San Vicente St., Bogo City, Cebu

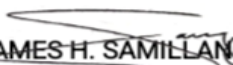


STAT-HCRMC STATISTICAL CENTER CERTIFICATION

This is to certify that **MARICHE B. PESIAO** submitted her **MASTER'S THESIS** in the office titled "**STRATEGIC INTERVENTION MATERIALS IN MATHEMATICS FOR GRADE ONE LEARNERS: AN ENHANCEMENT PLAN**" for plagiarism check. The results were as follows:

TURNITIN SUBMISSION ID	-----	oid:::31188:112175510
SIMILARITY INDEX	-----	5%
ORIGINALITY INDEX	-----	95%
REMARKS	-----	Passed

This certification is issued to **Pesiao, M. B.** on the 14th day of September 2025 for whatever legal purpose this may serve her best.


JAMES H. SAMILLANO, Ed.D.

STAT-HCRMC OFFICER
CENTER FOR RESEARCH AND DEVELOPMENT
CEBU ROOSEVELT MEMORIAL COLLEGES

THESIS INSTITUTIONAL REVIEW COMMITTEE

Republic of the Philippines
Commission on Higher Education
Felipe R. Verallo Memorial Foundation College
Clotilde Hills, Dakit, Bogo City, Cebu
(032) 434-8210
frvmfi@yahoo.com

GRADUATE SCHOOL

MASTER OF ARTS IN EDUCATION (M. A. ED.)
Major in Administration and Supervision

**OFFICE OF THE CHAIRMAN ON THE THESIS INSTITUTIONAL
REVIEW COMMITTEE**

**CERTIFICATION ON THE NOTICE TO PROCEED FOR A THESIS
SIMILARITY-TURNITIN CHECK AND FOR THE FINALIZATION
TOWARD PRINTING AND SUBMISSION**

TO WHOM THIS MAY CONCERN:

This is to certify that as per the scrutiny of the revised thesis manuscript of the writer-examinee, (Mr./Ms./Mrs.) Mariche B. Pesiao, as could be based on the recommendations of the thesis oral examination panel, the submitted revised work was assessed and found to have met the requirements of the Graduate School Thesis Institutional Review Committee (TIRC) of the Felipe R. Verallo Memorial Foundation Inc. (FRVMFI), Clotilde Hills, Dakit, Bogo City, Cebu.

Based on the foregoing, this is to certify further that the indicated writer-examinee is thus given the notice to proceed for the similarity-turnitin check at 10 percent or lower at an accredited similarity-turnitin check center for the whole thesis manuscript and the subsequent finalization toward printing and submission, through the facilitating of the adviser.

Given this 1st day of September, 2025
at the FRVMFI, Clotilde Hills, Dakit, Bogo City, Cebu, Philippines.


PERFECTO P. PRIAS, JR.
Chairman, TIRC