

AN ASSESSMENT OF MATHEMATICS 2 COMPETENCE: ACTIVITY SHEETS

Jacqueline Empinado Gemilgo

Valencia Elementary School

Department of Education, Carcar City Division, Philippines

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Abstract: This study assessed the level of competence in Mathematics among Grade 2 learners, as well as the learning experiences and challenges encountered in teaching at a public elementary school in the Division of Carcar City for the School Year 2024–2025. The researcher employed descriptive normative methods, utilizing the Early Grade Mathematics Assessment (EGMA) Survey Tool, which was administered to 72 Grade 2 learners. Findings revealed that although some foundational skills were evident, the majority of learners demonstrated a "Nearly Numerate" level across most EGMA domains, with notable weaknesses in rational counting and number identification. Teachers reported challenges in addressing diverse levels of prior knowledge and foundational gaps, while learners expressed a need for more engaging and interactive learning experiences. Based on these findings, the study concludes that learners exhibit a generally developing level of numeracy with notable weaknesses in addition, subtraction, and foundational number sense skills, and their feedback highlights the need for more engaging, interactive, and differentiated instructional approaches to effectively support diverse levels of preparedness and improve Grade 2 Mathematics teaching and learning. Thus, it is recommended that implementation of an intervention plan which incorporates more engaging pedagogical strategies and differentiated instruction to address learners' varying levels of preparedness.

Keywords: EGMA, Level of Competence, Assessment, Mathematics, Grade 2 learners, Carcar City, Cebu, Philippines.

I. INTRODUCTION

A teacher's diagnostic competence can be defined as their ability to interpret students' thinking and reasoning processes, to monitor students' progress and difficulties, and to provide appropriate responses to the results of the diagnosis (Wijaya, 2019). With respect to diagnostic competence, students have different preconditions; therefore, teachers need to recognize each student (Tolsdorf & Markic, 2017) and must be able to describe and interpret the individual student's abilities and difficulties.

Mathematics emerged as a subject of study along with civilization. In the present scenario, mathematics is an absolutely necessary subject for living. This importance is evident in the school curriculum and the emphasis placed on mathematics education (Gafoor & Kurukkan, 2018).

Students' performance in mathematics consistently receives attention in different countries because it is regarded as a key subject, significant for the nation's growth and development (Capuno et al., 2019). The knowledge and skills of students in mathematics are essential in their daily lives for overcoming the difficulties they may face (Mohamed & Waheed, 2011; Capuno et al., 2019).

The Philippines participated in the Trends in International Mathematics and Science Study (TIMSS) in 2003, ranking 34th out of 38 participating nations in mathematics. Additionally, the Global Competitiveness Report of the World Economic Forum places the nation 79th out of 138 participating countries in terms of the quality of mathematics education for the 2016–2017 academic year. The National Achievement Test (NAT) results showed that the mean percentage score (MPS) for high school was below the students' intended performance, according to the Department of Education (DepEd) of the Philippines.

One of the significant innovations and seen as essential to the development of the country is the incorporation of the K–12 program into the Philippine Basic Education Curriculum. Today, critics continue to insist that the government is not yet prepared for the transition (Refugio et al., 2020). They mentioned that many problems and difficulties have been faced by school administrators and teachers in the different learning areas across grade levels, specifically in the areas of Mathematics and Science. Interestingly, Mathematics education researchers globally examined a wide range of issues and practices in Mathematics classrooms from various angles. The findings suggested ways for improving teaching Mathematics at the secondary level.

The scenarios mentioned above inspired the researcher to delve into the details of the challenges in teaching and learning Mathematics encountered by both teachers and learners, respectively. Over the years, Mathematics is a subject that is least understood by our learners in school. During the quarterly SMEA Report, several issues and concerns were identified in the area of Mathematics, including low academic performance and the number of learning competencies not covered in a quarter. It was noted that, on average, 65% of the learners have grades within the range of 75-79 in Mathematics. This was alarming, given that all quarterly assessments were teacher-made tests.

Additionally, on average, only 98% of the learning competencies in a quarter were taught. A few were carried over into the next quarter. At the end of the school year, several learning competencies were not delivered to the learners. This scenario had a significant impact on the students' learning ability, as the mathematics subject requires prerequisite lessons before proceeding to the following learning competencies.

Studying the grassroots of these challenges in the field provides a better understanding of the nature of these issues and concerns, as well as the corresponding interventions that best tailor to the identified gaps. Determining the bottlenecks in teaching Mathematics and designing a program to improve learners' performance in this area gradually was the target output of this piece of work. It aimed to contribute to the overall target of the Schools Division Office of Carcar City, which is improved teaching and learning in Mathematics. Thus, the Math competences and challenges encountered in teaching Mathematics 2 vis-à-vis the least mastered competencies of the learners in EGMA served as the bedrock in designing activity sheets that aim at narrowing this learning gaps.

Research Questions

The study assessed the teaching and learning in Mathematics Competence of grade 2 learners in one of the public elementary schools in the Division of Carcar City for School Year 2024-2025 as basis for designing an activity sheet.

Specifically, it sought to answer the following problems:

1.. What is the level of competence of the learners in Mathematics/ numeracy of school year 2024-2025 as reflected in EGMA Survey Tool?

- 1.1 oral counting;
- 1.2 rational counting;
- 1.3 number identification;
- 1.4 number discrimination;
- 1.5 finding the missing number;
- 1.6 addition and
- 1.7. subtraction?

2. What are the least learned competencies as revealed in the EGMA tool?

3. What are the learning experiences and challenges encountered in teaching and learning Mathematics 2 for the school year 2024-2025?

- 3.1 perspective of teachers; and
- 3.2 perspective of the learners?

4. Based on the findings, what activity sheet can be designed

II. RESEARCH METHODOLOGY

A. Design

This study utilized the descriptive method of research. Descriptive research is the best option, in accordance with McCombes (2019), when the goal of the study is to discover features, frequencies, trends, correlations, and categories. A helpful technique for scientific research that tries to describe the current state of events or phenomena is the descriptive method. As used in the study, data in the level of competence, the least learned competencies, and learning experiences and challenges encountered were determined.

B. Environment

The research study covered the Grade 2 learners in an identified public elementary school located in Carcar City division, which has 4 levels of education: the mandatory kindergarten, grade school, junior high school, and senior high school.

The school, where the study is to be conducted, has 20 teachers, comprising of 17 Proficient Teachers and 3 Highly Proficient Teachers. This institution is manned by a School Principal, who has 12 years of experience as a school head. Given its number of teachers, the school is categorized as a medium school. The school has been known for its achievements in the field of scouting, being awarded as the Best in the BSP Camp Gate for SY 2024-2025.

C. Respondents

The respondents of this study were the selected Grade 2 learners of Valencia Elementary School, Carcar City Division for school year 2024-2025. Using the purposive sampling technique, the sample size was composed of 139 learners.

D. Instrument

There were three (3) sources of data under study. One is a secondary data from School Form 9 that provided the researcher with the average grade of the learners in Mathematics for school year 2024-2025. The other source of data were being generated using the DepEd-Region 7 Early Grade Mathematics Assessment Tool for Grade 2 and Rapid Math Assessment Tool. The researcher utilized this adapted assessment tool as means of gathering primary information. The tool was designed to source out information related to the Mathematics performance of Grade 2 learners vis-à-vis MELCS of DepEd. The third is an adapted interview guide to extract their lived experiences and challenges of the respondents.

E. Data Analysis Plan

To interpret the study's results quantitatively, the following statistical tests were employed: simple percentage, mean percentage score, and ranking. On the other hand, the researcher employed thematic analysis to determine the experiences and challenges encountered.

III. RESULTS AND DISCUSSION

Level of Competence of the Learners in Mathematics

Mathematical competence encompasses a blend of deep conceptual understanding, procedural fluency, strategic problem solving, adaptive reasoning, and a confident disposition toward math. It's not just about calculating correctly it's about grasping underlying concepts, applying them effectively in varied contexts, selecting efficient strategies, reasoning through results, and maintaining a resilient, curious mindset. These interconnected dimensions collectively define one's overall proficiency in mathematics and underpin frameworks like PISA and the Global Proficiency Framework, which categorize competence from basic recall to advanced, real-world problem solving. This is presented in Table 1.

Table 1: Level of Competence of The Learners in Mathematics n = 79

Domains	Mathematics Competence						Total	
	Non-Numerates		Nearly Numerates		Numerates		F	P
	F	P	F	P	f	P		
Oral Counting	1	1.27	54	68.35	24	30.38	79	100
Rational Counting	19	24.05	60	75.95	0	0	79	100
Number Identification	0	0	67	84.81	12	15.19	79	100
Number Discrimination	0	0	70	88.61	9	11.39	79	100
Finding the Missing Number	0	0	76	96.20	3	3.80	79	100
Addition	0	0	79	100	0	0	79	100
Subtraction	0	0	79	100	0	0	79	100

Table 2 shows the identified strongest and weakest data per level of competence. Non-Numerates show minimal skills beyond basic oral and rational counting—1.27% can count orally, but none can identify or manipulate numbers, add, or subtract. Nearly Numerates excel in arithmetic, with 100% mastering addition and subtraction, while rational counting remains their weakest domain. Numerates demonstrate strong proficiency overall, though around 30% still struggle with oral counting, suggesting room for improvement at even higher competence levels

These data mean that at the non-numerates level, "Oral Counting" has the fewest learners in the non-numerates category, suggesting that the ability to recite numbers verbally is a foundational skill that some individuals with very limited mathematical understanding still possess. However, the complete absence of non-numerates in all other domains highlights a significant lack of knowledge in core numerical concepts, such as recognizing and distinguishing numbers, identifying missing numbers, and performing basic arithmetic operations. This suggests a need for intensive foundational interventions that focus on these fundamental skills. While in Nearly Numerates: The finding that all learners in this category demonstrate competence in "Addition" and "Subtraction" implies that while they may still be developing a full grasp of number concepts, they have successfully learned these basic arithmetic operations. This could suggest that procedural learning of these operations might precede a deeper conceptual understanding of numbers. The relative weakness in "Rational Counting," where a large portion of this group still struggles, suggests that connecting spoken number sequences to quantities or sets of objects is a key area where their numeracy needs further development. Then in Numerates: The absence of Numerates in "Rational Counting," "Addition," and "Subtraction" confirms that these are skills mastered by individuals classified as competent in mathematics. The "weakest" area, "Oral Counting" (with 30.38% of Numerates), doesn't necessarily indicate a fundamental weakness but rather that some learners who are otherwise competent in more complex areas might still have some minor gaps or varying levels of fluency in simply reciting numbers. This could be due to various factors and might not hinder their overall mathematical understanding.

It implies that there's a clear progression of understanding across the domains, with oral counting and basic arithmetic operations being more accessible than number identification, discrimination, and finding missing numbers for those with lower levels of competence. Secondly, a significant portion of the learners (the "Nearly Numerates") have grasped basic arithmetic but still struggle with more fundamental number sense concepts, such as rational counting, number identification, and discrimination. This suggests that instruction might have focused on procedural skills before solidifying a deep understanding of numbers and their relationships. Finally, even among those deemed "Numerate," there might be varying levels of mastery in the most basic skill of oral counting, indicating that foundational skills should not be entirely overlooked even when learners demonstrate competence in more advanced areas. Overall, the data highlights the need for differentiated instruction that addresses the specific learning gaps at each competence level, focusing on building a strong number sense as a foundation for more complex mathematical skills.

The findings of this study are supported by a survey by Villasoto (2025), which highlights the challenges in numeracy among primary school learners and the need for targeted interventions. The study highlights the impact of factors such as learning modalities (face-to-face vs. remote). It emphasizes the importance of addressing foundational skills, which aligns with the observation that a significant portion of learners in the provided data are "Nearly Numerates" and require strengthening of basic number sense.

Least Learned Competencies

The Mathematics for Grade 2 builds strong foundational skills in whole numbers up to 1,000, ordinal numbers up to the 20th, and money up to ₱100, emphasizing addition, subtraction (including regrouping), as well as early concepts in unit fractions, geometry, measurement, and data representation. It also integrates pattern recognition, basic algebraic thinking, and simple statistics and probability, supporting critical thinking and problem-solving through real-life applications. The result is presented in Table 2.

Table 2: Least Learned Competencies n = 79

Mathematics Competencies	f	P	Rank
Oral Counting	54	27.98	1
Rational Counting	21	10.88	4
Number Identification	43	22.28	2
Number Discrimination	32	16.58	3
Finding the Missing Number	19	9.84	5
Addition	12	6.22	6.5
Subtraction	12	6.22	6.5
Total	193	100	

Multiple Response

As shown in Table 3, it reflects the least learned competencies in Mathematics. The data reveals that addition and subtraction appear to be the strongest areas among the listed competencies, with the fewest learners (6.22% each) classified as having learned them. The data revealed that Oral Counting is the most learned competency for this group, with over a quarter of the learners (27.98%) who passed the assessment. Number Identification and Number Discrimination also present significant hurdles but with 22.28% and 16.58% of learners, respectively, not having mastered these skills. This table provides a clear snapshot of the specific mathematical skills where the learners in this group require the most targeted support and intervention.

The data indicate that the specific mathematical skills posing the most significant difficulty for this group of 79 learners are Addition and Subtraction. This suggests that these basic operations haven't been mastered yet, indicating a greater need to reinforce these areas to ensure a solid foundation for future mathematical learning. The high percentages associated with oral Counting, number identification, and number Discrimination indicate significant weaknesses in foundational number sense skills. The fact that over a quarter of the learners struggle with simply reciting numbers (Oral Counting) suggests potential issues with basic numerical understanding that could impact their ability to grasp more complex concepts. Similarly, difficulties in recognizing and distinguishing numerals (Number Identification and Number Discrimination) will likely hinder their progress in all subsequent mathematical domains. The middle ranks of Rational Counting and Finding the Missing Number point to challenges in connecting number words to quantities and understanding number patterns.

It implies that addition and subtraction appear to be the weakest areas. The fact that some learners still haven't mastered these basic operations indicates that even these foundational arithmetic skills require further consolidation. This suggests that some learners are relying on rote memorization rather than a deep conceptual understanding of these operations. Another striking implication is the fragile foundation in basic number sense. The high percentages of learners struggling with oral counting, number identification, and number discrimination suggest that a significant portion of the group lacks the fundamental building blocks necessary for more advanced mathematical understanding.

The finding is supported by the study of **Jordan et al. (2020)**, which provides longitudinal evidence that children's number sense and basic arithmetic abilities upon entering first grade are strong predictors of their mathematics achievement later in the same grade. The specific components of number sense that they assessed, including counting, number knowledge, and basic arithmetic operations, align with the competencies identified as the least learned skills. This study highlights that weaknesses in these foundational areas can have a significant impact on later mathematical success.

Learning Experiences and Challenges Encountered

The lived experiences of Grade 2 mathematics teachers in the Philippines reveal a rewarding yet demanding balance. While they cherish witnessing students grasp foundational concepts and build numerical confidence, educators often face the challenge of teaching learners with diverse academic backgrounds and delayed numeracy skills. The themes emerged based on the narratives were rewards of teaching Mathematics 2, challenges in teaching Mathematics 2, student preparedness and prior knowledge, specific area of student struggle, effective teaching strategies and resources, foundational numeracy gaps, and addressing diverse learners needs.

Theme 1: Rewards of Teaching Mathematics 2

This theme encapsulates the positive aspects and satisfactions the teacher derives from their role in instructing Mathematics 2. It focuses on the moments of student understanding and growth, highlighting the intrinsic rewards associated with witnessing their learning progress and developing confidence in their mathematical abilities. This theme often touches upon the teacher's sense of accomplishment in facilitating these breakthroughs and fostering a positive attitude towards mathematics among their students.

As they elaborated, " *he most rewarding aspect is definitely seeing that 'aha!' moment when a student finally grasps a concept they were struggling with. It's also very fulfilling to witness their confidence grow as they become more comfortable with numbers and problem-solving. When they start to see the relevance of math in their daily lives, that's a real win.*" (T1, T2, T3)

This theme implies that despite the challenges, there are significant intrinsic motivators for the teacher. The satisfaction derived from witnessing student understanding and growth suggests a dedication to their profession and a belief in the potential of their students to learn mathematics. It also highlights the importance of celebrating student successes, which can contribute to a positive learning environment and foster a sense of accomplishment for both students and teachers.

This is supported by the study of Han and Yin (2024), who found that intrinsic rewards, such as witnessing student growth and experiencing a sense of accomplishment, are significant predictors of teacher motivation and job satisfaction. While not specific to mathematics, the findings underscore the importance of these internal rewards in the teaching profession.

Theme 2: Challenges in Teaching Mathematics 2

This theme suggests that effective mathematics instruction necessitates teachers to navigate a complex array of challenges. The diversity in student abilities necessitates differentiated instruction and a significant amount of individualized attention. These challenges underscore the need for adequate resources, effective classroom management strategies, and ongoing professional development to equip teachers with the skills to address these diverse learning needs effectively.

As extracted from their responses, *"One of the biggest challenges is the wide range of prior knowledge and abilities among the students. Some come in with a solid foundation, while others are still struggling with basic concepts from Grade 1. Managing these different learning paces and ensuring everyone is progressing can be quite demanding."*(T1, T2)

This theme implies that despite the challenges, there are significant intrinsic motivators for the teacher. The satisfaction derived from witnessing student understanding and growth suggests a dedication to their profession and a belief in the potential of their students to learn mathematics. It also highlights the importance of celebrating student successes, which can contribute to a positive learning environment and foster a sense of accomplishment for both students and teachers.

This is supported by the study of Tomlinson and Jarvis (2023), who highlighted the complexities and time demands of effectively differentiating instruction in mathematics classrooms with varying student abilities. The study emphasized the need for ongoing professional development and adequate resources to support teachers in this endeavor.

Theme 3: Student Preparedness and Prior Knowledge

This theme specifically addresses the initial academic standing of Mathematics 2 students as they enter the grade level. It explores the teacher's observations regarding their students' existing understanding of fundamental mathematical concepts and skills acquired in previous grades. This theme is crucial for understanding the baseline from which instruction begins and for identifying any widespread gaps in foundational knowledge that might impact their ability to grasp new material.

As expressed by the respondents, *"Generally, the preparedness varies. Some students demonstrate a good understanding of basic counting and number recognition. However, a significant number still seem to lack a strong foundation in areas like number sense, place value, and even basic addition and subtraction facts. This makes introducing more complex Grade 2 topics challenging."*(T1, T2, T3)

This theme implies that a significant factor influencing learning in Mathematics 2 is the strength of the students' foundational mathematical understanding from previous grades. If a substantial number of students enter the grade level with gaps in basic concepts, it necessitates teachers to spend valuable instructional time revisiting and reinforcing these fundamentals before introducing new, more complex topics. This highlights the importance of a strong and consistent mathematics curriculum across grade levels.

This is supported by the study of Walsh et al. (2022), who demonstrated a strong correlation between early numeracy skills (developed in grades prior to Grade 2) and later mathematical achievement. The findings suggest that addressing foundational gaps early is crucial for long-term success in mathematics.

Theme 4: Specific Areas of Student Struggle

This theme pinpoints the particular mathematical topics or skills within Mathematics 2 curriculum that students consistently find most challenging to learn and understand. It moves beyond general challenges to identify specific content areas where students exhibit the most difficulty, allowing for targeted interventions and adjustments in teaching strategies for these particular concepts.

As they responded, *"Yes, definitely. I've noticed that some students in Grade 2 still struggle with basic number identification, counting sequences, and understanding the relationship between numbers. For example, some learners are able to count to 20 but not fully understand what '15' represents in terms of quantity. This lack of strong foundational numeracy makes it harder for them to grasp more advanced concepts."* (T1, T2, T3)

This theme implies that certain mathematical concepts within the Grade 2 curriculum are inherently more difficult for students to grasp. Identifying these specific areas enables the implementation of targeted instructional strategies and the allocation of additional time and resources to these challenging topics. It also suggests the potential need for alternative teaching approaches or the use of specific manipulatives and visual aids to make these concepts more accessible.

This is supported by the study of Ramirez and Nunes (2024), who investigated common difficulties students face with place value concepts in the early grades, including Grade 2. The study highlighted the need for explicit and varied representations to support students' understanding of this foundational concept.

Theme 5: Effective Teaching Strategies and Resources

This theme focuses on the pedagogical approaches, techniques, and materials that the teacher has found to be most successful in engaging Mathematics 2 students and promoting their learning. It highlights the methods that have proven effective in making abstract concepts more accessible, fostering student participation, and ultimately leading to better comprehension and retention of mathematical knowledge.

As they explained, *"I try to differentiate instruction by providing varied activities and levels of support. For students who are struggling, I offer more one-on-one guidance and break down tasks into smaller steps. For those who are more advanced, I provide extension activities and more challenging problems. Group work with mixed-ability students can also be beneficial, allowing peer learning."* (T1, T2, T3)

This theme implies that active and engaging teaching methods, particularly those that make abstract concepts concrete through manipulatives and visual aids, are crucial for successful mathematics learning in Grade 2. The effectiveness of these strategies underscores the importance of providing teachers with access to such resources and training them in their effective implementation. It also suggests that a multi-sensory approach to teaching mathematics can cater to different learning styles and enhance understanding. Hands-on, visual, and engaging teaching methods are highly effective for mathematics learning in early grades.

This is supported by the Study of Carbonneau et al. (2023) who provided strong evidence for the positive impact of using manipulatives on students' mathematical understanding and achievement across elementary grades. The study emphasized the importance of purposeful and guided use of these tools.

Theme 6: Foundational Numeracy Gaps

This theme specifically examines whether the teacher has observed any underlying weaknesses in basic number sense among their Mathematics 2 learners. It looks at difficulties with fundamental concepts like number identification, counting, and understanding quantity, which are typically developed in earlier grades. Identifying these gaps is crucial as they can significantly hinder a student's ability to progress in more advanced mathematical topics.

As the respondents said, *"More professional development focused on effective strategies for teaching foundational numeracy and addressing learning gaps would be incredibly helpful. Access to more age-appropriate and engaging manipulatives and visual aids would also make a big difference. Perhaps resources tailored to the local context and language could also enhance understanding."*(T1, T2, T3)

This theme strongly implies that weaknesses in basic number sense are a significant impediment to learning more advanced mathematical concepts in Grade 2. If students lack a solid understanding of number identification, counting, and quantity, they will struggle to build upon these foundations. This underscores the critical importance of early numeracy interventions and ensuring that students develop a strong number sense in the early primary grades. Weak number sense in early grades hinders progress in more advanced mathematical topics.

This is supported by the study of Griffin et al. (2022) who demonstrated that targeted interventions aimed at improving number sense in the early primary grades have a positive impact on students' later mathematical performance, highlighting the critical role of a strong foundational understanding of numbers.

Theme 7: Addressing Diverse Learning Needs

This theme explores the strategies and approaches the teacher employs to cater to the varying learning styles, abilities, and paces of the students within their Mathematics 2 classroom. It focuses on how the teacher differentiates instruction, provides individualized support, and creates an inclusive learning environment that accommodates the diverse needs of all learners.

As extracted from **Teacher 1**: *"It's a real mix in my class. Some students catch on to the lessons very quickly, while others need a lot more time and repetition. For those who are struggling, I try to break down the activities into smaller steps. I might use more visual aids or have them work with manipulatives longer than the others. Sometimes, I pair them with a classmate who understands the concept well so they can learn from each other. For the faster learners, I give them extension activities or more challenging problems to keep them engaged."*

From Teacher 2: *"I find that using different types of activities helps. Some children learn best by seeing, others by doing, and some by listening. So, I try to incorporate a variety of methods in my lessons. We might have group work where they can discuss ideas, individual practice sheets, and hands-on activities using things like bottle caps or sticks. I also try to move around the classroom a lot to check on everyone and give individual help where it's needed."*

And from Teacher 3: *"One thing I've been trying is to group the children based on their current understanding of a topic. For example, during our lesson on addition, I might have one group working on basic adding of single-digit numbers with concrete objects, another group adding two-digit numbers without regrouping, and a third group tackling addition with regrouping. This allows me to tailor my instruction more specifically to what each group needs. Of course, these groupings are flexible and change depending on the topic."*

This theme implies that effective teaching requires a personalized approach that acknowledges and responds to the individual learning differences among students. Differentiation of instruction, providing varied support, and utilizing strategies like peer learning are essential for ensuring that all students, regardless of their starting point, can make progress in mathematics. This highlights the need for teachers to be skilled in identifying and addressing these diverse needs. Effective teaching requires differentiated instruction to cater to the varying abilities and learning styles of students.

This is supported by Subban (2023) who synthesized the research on effective strategies for differentiating mathematics instruction, emphasizing the importance of flexible grouping, varied tasks, and ongoing assessment to meet the diverse needs of learners within a classroom.

Learners' Perceived Challenges and Experiences

In Carcar City, Grade 2 students describe math lessons as a mix of fun and challenge: they particularly enjoy activities that feel like games or use hands-on visuals, but struggle when tasks involve a lot of writing, complicated vocabulary, or time constraints. These insights from EGMA interviews indicate that playful and tangible activities enhance their engagement, while reducing heavy writing and simplifying language can help alleviate their difficulties. Understanding these preferences is key for teachers to design lessons that are both supportive and effective for these young learners.

Theme 1: Overall Perception of the EGMA Activity

Theme 1 explores how Grade 2 learners in Carcar City initially reacted to the EGMA activity whether they found it fun, just "okay," or challenging. Many described it as "like a game," expressing excitement and enjoyment, while a few noted difficulty or indifference, indicating that while game-like elements can boost engagement, attention must be paid to provide supportive scaffolding for all skill levels. Understanding these first impressions helps educators design math experiences that are both engaging and accessible, ensuring learners begin confidently and stay motivated.

Learners' Responses as quoted, *"I find our EGMA activity fun!" / "Ganahan ko sa atong gihimo nga activity!" "Because it was like a game." / "Kay murag dula-dula man." "Our EGMA activity was okay." / "Okay ra man ang atong gihimo nga activity." "It was just questions." / "Mga pangutana ra man pud." "I didn't really like our EGMA activity." / "Dili kaayo ko ganahan sa atong gihimo nga activity." "Because some parts were difficult." / "Kay naay mga part nga lisud." (L1, L2, L4, L7, L8, L9)*

This is supported by a recent study of Kaku and Arthur (2025), who found that positive perceptions of mathematics significantly predict student interest and performance. This supports the implication that a positive overall perception of the EGMA activity by learners in Carcar City is crucial for their engagement and potential learning outcomes from the assessment itself, suggesting that making such activities enjoyable and accessible is key.

Theme 2: Perceived Learning Outcomes

Students report clear learning gains from the EGMA activity, noticing improvements in counting, shapes, problem-solving, and careful listening, and finding that math can be enjoyable. Their ability to name specific skills shows that they were thinking about their learning, a sign of metacognitive awareness, which research suggests strengthens learning by helping students monitor and understand what they have learned. This demonstrates that the EGMA activity not only taught them math but also helped them reflect on their learning process an essential step for achieving a deeper understanding.

Learner Responses as quoted, *"I learned how to count numbers better." / "Nakat-on ko unsaon pag-ihap og mas maayo." "I learned about shapes." / "Nakat-on ko bahin sa mga porma." "I learned to solve simple problems." / "Nakat-on ko unsaon pagsulbad sa mga simple nga problema." "Aside from that, I also learned to listen carefully." / "Gawas ana, nakat-on pud ko unsaon pagpaminaw og tarong." "I learned that math can be interesting." / "Nakat-on ko nga ang math mahimong makalingaw." (L1, L2, L3, L7, L9, L10, L11)*

This theme implies the learners' conscious recognition of the knowledge or skills they acquired through the EGMA activity. Their ability to articulate what they learned suggests a level of active processing and understanding during the task. Positive responses indicating specific learning outcomes validate the activity's potential to achieve its educational objectives from the learners' viewpoint. A lack of perceived learning might suggest that the learning objectives were not clearly conveyed or that the activity did not facilitate noticeable knowledge acquisition for some students in the local context.

The implication that learners' awareness of their learning during the activity is essential aligns with **Hattie and Timperley's (2017)** model of feedback, as discussed in a review by **Wisniewski et al. (2020)**, which implicitly encourages them to recognize what they are learning. Suppose learners can articulate what they learned from the EGMA. In that case, it suggests the activity provided some level of clarity regarding its objectives and facilitated self-awareness of knowledge acquisition.

Theme 3: Most Liked Aspect of the Activity

This theme identifies the specific component or part of the EGMA activity that the learner enjoyed the most and the reasons for their preference. It can provide insights into what types of tasks or presentations are most engaging for the learners.

Learner Responses as quoted, "I liked the part where we used blocks to count. Because it was easy to see the numbers." / "Ang pinakaganahan nako kay ang part nga naggamit mi og mga blocks para mag-ihap. Kay dali ra makita ang mga numero." "I liked the drawing part. Because I like to draw." / "Ang ganahan nako kay ang pagdrowing. Kay ganahan man ko magdrowing." "I liked the part with the pictures. Because they were colorful." / "Ang ganahan nako kay ang part nga naay mga hulagway. Kay kolorful man sila." "I liked solving the puzzles. Because it felt like a game." / "Ang ganahan nako kay ang pagsulbad sa mga puzzle. Kay murag dula man." (L1,L3,L6,L8,L10)

This theme highlights the learners' awareness of what they have gained from participating in the EGMA activity. Identifying specific learning points, even if basic, demonstrates a level of metacognition and the potential for the activity to contribute to their mathematical understanding. Responses within this theme can reveal which aspects of the activity were most successful in conveying intended learning objectives from the learners' perspective.

This is supported by research on student engagement. **Ainley and Ainley (2017)** who emphasize the role of interest and enjoyment in fostering engagement. If learners in Carcar City highlight specific parts of the EGMA as enjoyable, incorporating similar elements in future mathematics activities could enhance engagement and motivation.

Theme 4: Least Liked Aspect of the Activity

This theme identifies the specific component or part of the EGMA activity that the learner enjoyed the least and the reasons for their dislike. This can highlight areas of difficulty, boredom, or lack of engagement for the learners.

Learner Responses as quoted, "I didn't like the part where we had to count my fingers in adding numbers. Because my hand got tired." / "Ang dili kaayo nako ganahan kay ang part nga kinahanglan mi moihap sa kamot og mag plus mga numero. Kay gikapoy akong kamot." "I didn't like the questions that were too long and time bounded. Because it was hard to understand." / "Ang dili kaayo nako ganahan kay ang mga pangutana nga taas kaayo unya dali ra kaayo dapat mahuman unya Kay lisud baya ihapon pa igkahuman ug sabot." "I didn't like the timed part. Because I felt rushed." / "Ang dili kaayo nako ganahan kay ang part nga naay timer. Kay nagdali-dali ko." (L1,L2,L4,L6,L7,L8)

This theme identifies the components of the EGMA activity that learners found unfavorable. Understanding the reasons behind their dislikes, whether due to difficulty, boredom, physical discomfort, or feeling rushed, is crucial for identifying potential weaknesses in the activity design. Addressing these issues can lead to more positive and effective learning experiences for the students in the future.

The implication that understanding disliked aspects helps identify barriers to learning is consistent with studies on mathematics anxiety and learning difficulties. As affirmed by **Ashcraft and Krause (2017)** in "Working memory, math anxiety, and math performance: An interference account" in *Psychonomic Bulletin & Review* found that negative emotions like anxiety can hinder performance. If learners in Carcar City express dislike due to difficulty or pressure, addressing these elements is crucial to minimizing negative emotional responses that can impede learning.

IV. CONCLUSION

Based on the study's findings, it can be concluded that the teaching and learning of Mathematics for Grade 2 learners in the identified public elementary school in Carcar City for the 2024-2025 school year indicate a need for targeted intervention. The learners demonstrate a generally developing level of numeracy with significant weaknesses in Addition, Subtraction, and foundational number sense skills. The learners' feedback further underscores the importance of incorporating more engaging and interactive pedagogical approaches and differentiating instruction to cater to varying levels of preparedness,

thereby enhancing both the teaching and learning of Mathematics for Grade 2. This is supported by the theory of Affective-Cognitive Consistency, as proposed by Rosenberg (1968), as cited by Capuno et al. (2019). It claims that adjustments to an individual's affective component will result in corresponding adjustments to their cognitive component, thereby achieving consistency between the two elements. The way learners approach a subject will impact their performance in it. A learner who has a poor attitude about a subject will believe that they will struggle with it. However, a learner with a positive outlook on a topic will be inspired to perform well because they believe they can succeed in that area.

V. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. Parents shall be encouraged to engage in their children's early mathematics education actively;
2. Teachers in Grade 2 shall prioritize the strengthening of foundational number sense skills, particularly oral counting, number identification, number discrimination, and rational counting, through explicit and varied instructional strategies.
3. Future researchers shall delve deeper into the specific factors contributing to the foundational numeracy gaps observed in Grade 2 learners.
4. Parallel Study Titles:

The following are three proposed titles for parallel studies:

- *Examining the Impact of Mother Tongue-Based Instruction on Early Numeracy Skills of Grade 2 Learners*
- *Differentiated Instruction in Mathematics: Its Effects on the Academic Performance and Engagement of Diverse Grade 2 Learners*
- *Parental Involvement and Early Mathematics Achievement: A Correlational Study of Grade 2 Learners in Public Elementary Schools in the Division of Carcar City.*

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