

Difficulties of Grade 7 Learners in Mathematics: Basis for an Instructional Intervention Plan

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Abstract

The aim of this study is to investigate the level of difficulties encountered by Grade 7 learners in Mathematics in the vicinity of a secondary public high school in a medium-sized division in the island of Negros Region. With this regard, this served as the basis for an instructional intervention program during the School Year, 2025-2026. A number of 7 learners participated in the study using a valid research instrument, accentuating the learning environment and support systems. The after-mentioned difficulties were measured across the domains of cognitive, affective, and motivational factors. At the same time, profiling variables inclusive of sex, average monthly income, the highest educational attainment of parents, and number of siblings, were part of considerations. Results revealed that the majority of respondents were male, coming from families who earn below Php 6,000 monthly, with parents having elementary-level education, and apparently, had fewer than four siblings. In addition, learners appeared to have moderate difficulty in Mathematics across cognitive, affective, and motivational areas, however, they

experience less difficulty with the learning environment and support systems. Meanwhile, female students had a little bit of difficulty in basic arithmetic. Results also showed that learners coming from lower-income families, having less educated parents, and who came from larger family size, faced higher level of cognitive difficulties, particularly with arithmetic fluency and problem-solving ability. Additionally, many learners seemed to fear failure which has become evident among males and those from larger families. Also, difficulties with the learning environment appeared generally low with male learners who were less likely to ask for help. In the same way, income played a poignant difference in cognitive challenges, while sex had a significant difference in learning environment challenges. Last, implications on the targeted instructional strategies and intervention programs are recommended to be implemented in improving foundational skills and advocacy on help-seeking behaviors that targeting the vulnerable group of learners.

Keywords: *Mathematics Difficulties, Arithmetic, Problem Solving Skills, Grade 7 Learners, Cognitive and Affective Factors, Motivational Factors, Learning Environment and Support Systems*

I. INTRODUCTION

A. Nature of the Problem

Mathematics is an important educational subject that builds essential skills in logic, reasoning, and problem-solving. As a subject of tremendous importance, mathematics worldwide remains one of the most difficult subjects for children to grasp, especially as they transition from elementary to junior high school. Grade 7 learners, in particular, have difficulty grasping mathematical concepts due mainly to cognitive constraints, such as difficulties with abstract concepts, problems that require multi-step solutions, and the maintenance of procedural knowledge (Boaler, 2022; Montague et al., 2019). These cognitive constraints are often aggravated by the move to more abstract content in early secondary math curricula, including integers, algebraic expressions, and rational numbers.

National assessments, such as the NAT, and international evaluations, such as SEA-PLM (2019), consistently revealed low mathematics proficiency among Filipino students. The Department of Education (DepEd, 2023) indicates a waning numeracy skill among Grade 7 learners; for instance, in the present secondary public school where the study was conducted, most learners do not just wrestle with calculations but also with considerations of higher order skills. On top of these cognitive challenges are the affective and motivational challenges, such as being afflicted with math anxiety, having a lack of confidence, or even being bored with the subject. Dela Cruz and Dela Cruz (2022) found that students with higher levels of mathematics anxiety tend to demonstrate lower self-efficacy and poorer performance in mathematics.

In line with the UN Sustainable Development Goal 4 (United Nations, 2015), this study targets to help improve inclusive and equitable quality education by identifying learning barriers and encouraging supportive, student-centered strategies that build both skills and confidence in mathematics. As a mathematics teacher, the researcher has seen students struggle in asking questions, explaining their solutions, and feeling unconfident when solving problems. These experiences have inspired the researcher to conduct the study. In this regard, the research examines how cognitive, motivational, and environmental factors contribute to students' difficulties in mathematics, and to create targeted interventions.

B. Current State of Knowledge

In the research by Peteros et al. (2025), grade 8 pupils from the Filipino community reported struggles with mathematics achievement, self-esteem, and mathematics testing due to the relationship between mathematics anxiety and self-esteem. Mathematics anxiety was discovered to commonly be med – intensity anxiety, which, incidentally, negatively affected achievement. Mathematics anxiety was closely bound to their level of self-confidence and their low self-esteem. Essentially, the mathematics anxiety they had would disrupt concentration, problem-solving, and participation in learning activities, thereby undermining achievement. This shows that learners' affective responses to subjects strongly influence achievement. Consequently, they can influence all types of other academic and social areas, as learning mathematics is the task of learning math-smart, self-smart, and people-smart. Furthermore, overpowering the context of self-acuity can be initiated to support mathematics involvement.



Similarly, Caguan et al. (2025) investigated the difficulties that first-year college students encounter in learning mathematics in an online modality, highlighting the multidimensional nature of these challenges. The study found that students experienced significant difficulties in cognitive understanding, anxiety, and environmental and instructional constraints. Limited interaction with instructors, technological issues, and reduced opportunities for guided practice contributed to students' struggles in understanding mathematical concepts and solving problems. The findings emphasize that mathematics learning difficulties are not solely cognitive but are also influenced by emotional and contextual factors, particularly in virtual environments. Accordingly, the study recommended targeted instructional strategies and support systems to enhance engagement and performance.

In the same vein, Vargas (2025), mathematics anxiety was assessed among seventh- and eighth-grade students, and the resulting data were used to identify ways to learn with the support of technology as a mechanism for enhancing learning effectiveness. Anxiety concerning the course was found to be high and moderate; students, when participating in activities or undertaking assessments, felt a pang of anxiousness on account of feelings like fear of getting bombarded with mistakes, dread of limited privacy, and anxiety that would substantially disturb their focus or even cause them to struggle seeking solutions. The anxiety had a detrimental effect on learners' trust in themselves, engagement in math, and resolve to work hard at solving mathematical problems. Vargas suggested that it is necessary to address both emotional barriers and cognitive facets, and that teachers provide technology-supported support that will facilitate more engaged, yet less threatening, learning. Ultimately, reducing anxiety and fostering confidence can improve participation and overall mathematical performance.

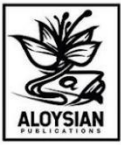
Moreover, the study by Orbeta and Paqueo (2016), conducted through the Philippine Institute for Development Studies, examined how socio-economic conditions influence education outcomes in the Philippines. The researchers found that family income plays a significant role in shaping students' academic achievement and access to learning opportunities. Learners from low-income households often face limited access to educational materials, tutoring, and supportive learning environments, which may hinder their cognitive development and academic performance. The study highlights the importance of addressing socio-economic disparities to promote equitable learning opportunities and improve students' educational outcomes.

Finally, the study by Pantaleon (2022) examined the help-seeking behavior of Filipino adolescents and found that students commonly turn to peers and trusted adults when they encounter academic or personal challenges. However, feelings of embarrassment, hesitation, and fear of negative judgment often discourage learners from openly asking questions or seeking assistance in class. Therefore, creating classrooms that encourage openness and collaboration is essential in promoting help-seeking behaviors among learners.

C. Theoretical Underpinnings

This study is grounded in Vygotsky's Sociocultural Theory of Cognitive Development (1978).

An assessment of any individuals, groups, organizations, or social experiences, however, should remain within the parameters provided by Vygotsky's Sociocultural Theory of Cognitive Development. This theory suggests that social interaction, language, and cultural tools are crucial to an individual's learning and cognitive development. The teacher should be aware of the Zone of Proximal Development (ZPD), or the gap between what a learner can do without help and what



he or she could achieve through assistance from someone more knowledgeable, because, according to Vygotsky, learning takes place through guided participation within this Zone. The theory stresses that the setting of learning-oriented activities, adequate scaffolding, and interpersonal support are essential in overcoming instructional difficulties.

Applying this theory to the present study, Grade 7 learners' mathematics learning difficulties can be understood as arising not only from deficiencies in cognitive development within the individual but also from inadequate social and instructional support within their learning environment. For example, the affective variables of low motivation and math anxiety could very well be the result of scarce scaffolding or encouragement, either from teachers or peers. Likewise, the availability of learning assistance at home, given parental education and family resources, constitutes learning potential for the learners as they advance within their Zone of Proximal Development (ZPD). Therefore, this theory substantiates the study's analysis of cognitive, affective, and environmental factors as simultaneous forces affecting students' mathematical learning difficulties.

D. Objectives of the Study

This study aimed to determine the level of difficulties of Grade 7 learners in mathematics in a secondary public high school in a medium-sized division in Negros Island Region during the School Year 2025 - 2026 as a basis for an instructional intervention plan. Specifically, it aimed to determine 1) the profile of respondents according to the variables sex, average family monthly income, parents' highest educational attainment, and number of siblings; 2) level of difficulty of learners in mathematics according to the areas cognitive, affective and motivational factors, and learning environment and support systems; 3) whether a significant difference exists between the levels of difficulties of learners when grouped and compared according to the variables; and 4) the formulation of an instructional intervention plan based on the findings of the study.

II. RESEARCH METHODOLOGY

This portion presents a discussion of the research methodology used, the subject-respondents of the study, the research instrument used, the validity and reliability of the instrument, the procedure for data gathering, conduct of the study, and the statistical tools and procedures for data analysis.

A. Research Design

A descriptive design was employed in this study. According to McCombes (2023), a descriptive research design aims to precisely and fully describe a population, situation, or phenomenon. It answers what, where, when, and how questions, but not the why question. It utilizes a wide variety of research designs to examine a single or multiple variables. Unlike in an experimental study, the researcher does not control or manipulate any of the variables but only observes and measures them.

In this study, the focus was on the difficulties in mathematics of learners. Therefore, the descriptive design is appropriate to answer this inquiry because it helped describe the level of difficulties of these learners in mathematics.

B. Study-Respondents

The respondents of the study were the 71 Grade 7 learners in the public secondary school. Since the number of respondents was manageable, total enumeration using the purposive sampling technique was used.

Purposive sampling was employed by intentionally selecting Grade 7 learners currently enrolled in mathematics at this school. Purposive sampling is a non-probability technique in which participants are deliberately chosen because they possess specific characteristics relevant to the research purpose (Creswell & Poth, 2018). This sampling approach is appropriate for the present study because the intervention plan must be grounded in students' actual needs and learning gaps related to mathematics difficulties.

Table 1 shows the distribution of respondents by section.

Section	Population	
	(N)	Percentage (%)
A	36	50.7
B	35	49.3
TOTAL	71	100.00

C. Instrument

The instrument used in this study is a self-made questionnaire to determine the level of difficulties of Grade 7 learners in mathematics. The questionnaire is mainly divided into 2 parts.

Part 1 gathered information to establish the respondents' profiles, such as sex, average monthly family income, parents' highest educational attainment, and number of siblings. In contrast, Part 2 is the questionnaire proper on the level of difficulty of Grade 7 learners in mathematics, with thirty (30) items for the respondents to rate. The questionnaire consists of 10 items for each of the areas: cognitive difficulties, affective and motivational factors, and learning environment and support systems. The respondents were asked to rate each statement using the five-point Likert scale, which contains the following scores: 5 (Always); 4 (Often); 3 (Sometimes); 2 (Rarely), and 1 (Almost Never).

The validity of the instrument was established with three expert validators who are recognized education professionals, including Education Program Supervisor in Mathematics within the division. Validation followed the criteria of Good and Scates, with interpretation ranges from Poor to Excellent. The instrument obtained a validation mean of 4.78, interpreted as Excellent, indicating high validity.

Reliability was determined using Cronbach's alpha to assess internal consistency. A pilot test was conducted among 30 Grade 7 learners who were not part of the actual respondents and were drawn from the neighboring school. The teachers' well-being yielded a reliability coefficient of 0.892, interpreted as Good, confirming that the research instrument is reliable.

D. Data Gathering and Procedure

After administering the validity and reliability tests, and upon approval of the schools division superintendent and the school head, the questionnaires were administered to the target respondents. The questionnaires were gathered, recorded, and analyzed. The data gathered from the responses of the respondents were tallied and tabulated using the appropriate statistical tools. The encoded data were processed using SPSS.

E. Data Analysis and Statistical Treatment

Objectives 1 and 2 employed a descriptive analytical scheme, using frequency counts and percentages as statistical tools to assess the profile of respondents, mean to assess the level of difficulties of learners in mathematics across the three areas. Objective 3 utilized a comparative analytical scheme, applying the Mann-Whitney U test to determine significant differences in the level of difficulties of learners in mathematics when grouped and compared according to the aforementioned variables.

F. Ethical Consideration

The respondents' participation was voluntary. The learners were given the option to participate or not, depending on their own volition and free will. Additionally, all respondents were informed in advance of the study's purpose and mechanics, and the researcher ensured they were fully informed. The researcher ensured that all participants were not harmed or put in a precarious situation by maintaining the confidentiality of their responses and information. Consent forms were provided to the parents of these learners, while the learners received assent forms. The anonymity protocol for respondents' identities was strictly followed, and the raw data, after appropriate treatment, were destroyed. The data and the results were for the sole purpose of this study, nothing else.

III. RESULTS and DISCUSSION

This section presents, analyzes, and interprets the data gathered to carry out the predetermined objectives of this study.

A. Profile of Respondents

Table 2
 Profile of the Respondents

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	38	53.5
	Female	33	46.5
Average Family Monthly Income	Lower (Below 6,000 Pesos)	52	73.2
	Higher (6,000 Pesos and Above)	19	26.8
Parents' Highest Educational Attainment	Lower (Elementary)	48	67.6
	Higher (High School)	23	32.4
No. of Siblings	Few (Below 4 Siblings)	40	56.3
	Many (4 Siblings and Above)	31	43.7
Total		71	100.0

Table 2 presents the profile of the 71 Grade 7 learner-respondents by sex, average monthly family income, parents' highest educational attainment, and number of siblings.

In terms of sex, a slightly higher proportion of respondents are male (38, or 53.5%) than female learners (33, or 46.5%), indicating a nearly balanced gender distribution. Regarding average monthly family income, the majority of respondents come from lower-income families earning below ₱6,000 per month (52, or 73.2%). In comparison, only 19 learners (26.8%) come from families earning ₱6,000 or more per month. This suggests that most learners come from economically disadvantaged households.

Among respondents' parents, a large proportion (48, 67.6%) had lower educational attainment at the elementary level, whereas 23 (32.4%) reached the high school level. This indicates that many learners come from homes where parents may have limited formal education, which could affect the academic support they provide.

As for the number of siblings, more than half of the respondents have few siblings (below four), accounting for 40 learners (56.3%), while 31 learners (43.7%) come from larger families with four or more siblings. To summarize, the data suggest that the majority of respondents are male, come from low-income families, have parents with lower educational attainment, and come from relatively smaller households—factors that may contribute to the mathematics learning difficulties of Grade 7 learners and should be considered in formulating an intervention plan.

B. Level of Difficulties of Grade 7 Learners in Mathematics

Table 3

Level of Difficulties of Grade 7 Learners in Mathematics in Cognitive Difficulties

Cognitive Difficulties		
Items	Mean	Interpretation
<i>As a learner, I...</i>		
1. find it hard to understand math word problems.	3.28	Moderate Level
2. forget the steps in solving math problems.	3.07	Moderate Level
3. have difficulty adding and subtracting large numbers.	2.46	Low Level
4. get confused when solving problems with fractions or decimals.	2.93	Moderate Level
5. have trouble understanding new math lessons right away.	2.97	Moderate Level
6. need help when solving multi-step math problems.	2.90	Moderate Level
7. make a lot of mistakes when doing mental math.	3.35	Moderate Level
8. cannot explain how I got the answer in a math problem.	2.99	Moderate Level
9. find solving algebraic expressions difficult.	3.11	Moderate Level
10. struggle to finish math exercises on time.	2.38	Low Level
Overall Mean	2.95	Moderate Level

Table 3 shows that the overall mean score for the cognitive difficulties of Grade 7 learners in mathematics is 2.95, indicating a Moderate Level. Among the indicators, the item “struggle to finish math exercises on time” had the lowest mean of 2.38, indicating a Low Level of difficulty. This suggests that time constraints are not a major cognitive concern for most learners. Rather than struggling with speed or pacing, learners appear more challenged by understanding and processing mathematical concepts, suggesting that their difficulties are more cognitive than procedural or time-related.

In contrast, the item “make a lot of mistakes when doing mental math” registered the highest mean of 3.35, corresponding to a Moderate Level of difficulty, highlighting mental computation as the most prominent cognitive challenge among the learners. Errors in mental math suggest weaknesses in numerical fluency, working memory, and the ability to manipulate numbers mentally without external aids. This result may also be attributed to the learners’ prior

learning experiences during the COVID-19 pandemic, when many students were exposed to modular distance learning with limited teacher guidance and immediate feedback. As a result, mastery of fundamental number facts and mental computation strategies may not have been fully developed, leading to gaps that persist in their current learning. Consequently, learners may rely heavily on written procedures and struggle to recall number relationships or apply efficient mental strategies, underscoring the need for targeted interventions that strengthen foundational numeracy skills and mental computation proficiency.

This finding is supported by Kivirähk-Koor and Kiive (2025), who found that learners with mathematics difficulties consistently exhibit deficits in working memory and numerical processing, which significantly affect mental calculation accuracy. Similarly, Träff et al. (2025) emphasized that mental arithmetic performance is strongly influenced by both number-processing abilities and general cognitive skills, particularly verbal working memory, and that weaknesses in these areas lead to frequent calculation errors. These studies support the present finding that difficulties in mental math remain a central cognitive concern among learners.

Table 4

Level of Difficulties of Grade 7 Learners in Mathematics in Affective and Motivational Factors

Affective and Motivational Factors		
Items	Mean	Interpretation
<i>As a learner, I...</i>		
1. feel nervous when my teacher asks me to answer math questions.	3.18	Moderate Level
2. am afraid of failing in math.	3.97	High Level
3. avoid studying math whenever I can.	2.51	Moderate Level
4. feel bored during math class.	2.39	Low Level
5. lose interest when math problems are too hard.	2.62	Moderate Level
6. do not feel proud even when I solve a math problem correctly.	1.92	Low Level
7. worry too much before math quizzes or tests.	2.75	Moderate Level
8. lack confidence in my math skills.	2.21	Low Level
9. feel that math is not important in real life.	1.48	Very Low Level
10. give up easily when I can't solve a math problem.	2.20	Low Level
Overall Mean	2.52	Moderate Level



Table 4 indicates that the overall mean score for the affective and motivational factors affecting Grade 7 learners' mathematics learning difficulties is 2.52, interpreted as a Moderate Level.

Among the indicators, the item "feel that math is not important in real life" had the lowest mean of 1.48, indicating a Very Low Level. This shows that learners generally recognize the real-life value of mathematics and do not view irrelevance as a key reason for disengagement.

In comparison, the item, "am afraid of failing in math," registered the highest mean of 3.97, corresponding to a High Level of difficulty. These findings highlight fear of failure as the strongest affective barrier among learners, reflecting heightened apprehension about making mistakes, being evaluated, or failing to meet expectations in mathematics. The predominance of fear of failure implies the need for classroom and school-based approaches that reduce evaluative threat and strengthen learners' confidence, such as supportive feedback, error-friendly classroom norms, frequent low-stakes formative assessments, explicit coping and emotion-regulation strategies, and opportunities to experience success through scaffolded tasks.

This result is supported by Zhang et al (2024), who identified fear of failure as part of the configuration of conditions associated with mathematics anxiety among middle school learners, indicating that performance-avoidance concerns and fear of negative evaluation can elevate mathematics anxiety. It is also consistent with Yarkwah et al. (2024), who reported that test anxiety in mathematics is linked to cognitive interference and feelings such as hopelessness and fear of failure, and that higher test anxiety is associated with lower mathematics performance.

Additionally, the study of Caguan et al. (2025) supports the present research by demonstrating that learners' difficulties in mathematics are multidimensional, encompassing cognitive, emotional, instructional, and environmental factors. These findings suggest that such difficulties persist across educational levels, from basic education to higher education, especially when not addressed early. This underscores the importance of identifying and addressing Grade 7 learners' difficulties through targeted instructional interventions to prevent long-term learning gaps.

Table 5

Level of Difficulties of Grade 7 Learners in Mathematics in Learning Environment and Support Systems

Learning Environment and Support Systems		
Items	Mean	Interpretation
<i>As a learner, I...</i>		
1. struggle to understand the math lessons when my teacher explains them.	2.38	Low Level
2. lack enough time to understand the math lessons in class.	2.44	Low Level
3. do not benefit much from the math examples used in class.	1.72	Low Level
4. avoid asking questions when I don't understand the math lesson.	2.90	Moderate Level
5. rarely get help from my classmates when I struggle with math.	2.80	Moderate Level
6. hardly find the activities helpful in making math easier to understand.	1.87	Low Level
7. find it hard to keep up because the math lessons go too fast.	2.30	Low Level
8. receive little support when I find a math topic difficult.	2.76	Moderate Level
9. feel too shy or embarrassed to ask for help during math class.	2.65	Moderate Level
10. feel uncomfortable in the math class environment.	1.89	Low Level
Overall Mean	2.37	Low Level

Table 5 presents the level of difficulties of Grade 7 learners in mathematics in terms of learning environment and support systems, with an overall mean of 2.37 interpreted as a Low Level.

Among the indicators, the item “do not benefit much from the math examples used in class” had the lowest mean of 1.72, indicating a Low Level. This finding suggests that learners generally find their teachers' examples helpful and understandable. Thus, instructional examples and demonstrations appear to be effective in supporting learners' comprehension of mathematical concepts.



However, the item “avoid asking questions when I don’t understand the math lesson” registered the highest mean of 2.90, corresponding to a Moderate Level of difficulty. This indicates that despite the generally supportive learning environment, many learners hesitate to ask questions when they encounter difficulties in mathematics. Such avoidance may stem from fear of negative evaluation, low academic confidence, or classroom norms that discourage active participation. This finding implies the need for teachers to foster a classroom climate that encourages inquiry, normalizes mistakes, and promotes help-seeking behavior as a positive learning strategy. Creating psychologically safe learning spaces and actively inviting questions may help learners overcome hesitation and improve their understanding.

These findings support the study of Peteros et al. (2025), which showed that Filipino learners experience moderate levels of mathematics anxiety, which is closely linked to self-doubt, fear of failure, and reduced academic confidence. Their study found that when students feel anxious and uncertain about their mathematical abilities, they become less willing to participate actively in class, including hesitating to ask questions when they do not understand a lesson. This reluctance is rooted in concerns about making mistakes or being negatively evaluated, leading learners to remain silent even when they experience difficulty.

Similarly, Vargas (2025) provides support for these directions by indicating moderate to high fear of math, which was closely related to student participation in the classroom. a strong correlation with math anxiety, student engagement, confidence, learning, and active participation. In effect, when students face mathematical tasks, they experience fear, tension, and worry. These emotions hinder students from speaking up, especially when they fear being wrong or evaluated negatively. Vargas went further to say that anxiety in class causes a barrier to meaningful engagement and understanding, which is why there is a need for interventions that address both cognitive and emotional barriers.

C. Comparative Analysis of the Level of Difficulties of Grade 7 Learners in Mathematics When Grouped and Compared According to the Variables
Table 6

Differences in the Level of Difficulties of Grade 7 Learners in Mathematics in Cognitive Difficulties When Grouped and Compared According to Variables

Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Sex	Male	38	37.83	557.500	0.422	0.422	Not Significant
	Female	33	33.89				
Average Family Monthly Income	Lower	52	39.14	330.500	0.033	0.033	Significant
	Higher	19	27.39				
Parents' Highest Educational Attainment	Lower	48	38.08	452.000	0.218	0.218	Not Significant
	Higher	23	31.65				
No. of Siblings	Few	40	32.39	475.500	0.093	0.093	Not Significant
	Many	31	40.66				

Table 6 presents the results of the Mann–Whitney U test comparing the levels of difficulty of Grade 7 learners in mathematics in the area of cognitive difficulties, grouped according to selected variables. The findings indicate that sex, parents' highest educational attainment, and number of siblings did not yield statistically significant differences, as their p-values exceeded the 0.05 level of significance. Thus, the null hypotheses stating that there is no significant difference in the level of cognitive difficulties in mathematics when learners are grouped according to sex, parents' educational attainment, and number of siblings are accepted. These results suggest that cognitive difficulties in mathematics are generally experienced similarly by learners across these demographic characteristics.

In contrast, a statistically significant difference was observed when learners were grouped according to average family monthly income ($p = 0.033$). Learners from lower-income families had a higher mean rank, indicating greater cognitive difficulties in mathematics than learners from higher-income families. Some learners in the lower-income group may encounter difficulties developing practical skills and understanding core concepts because they cannot access essential learning materials, including textbooks and calculators, and lack reliable internet access, as some families cannot afford it. Some low-income learners who live with their families must complete domestic tasks, including caring for family members, washing dishes, and helping on the farm, which leaves less time for studying and reduces their ability to concentrate. Economically disadvantaged families face nutritional problems and health issues, as well, which directly impact their ability to maintain focus and remember information. Consequently, the null hypothesis that there is no significant difference in the level of cognitive difficulties in

mathematics across learners grouped by average family monthly income is rejected. This finding underscores the role of family income as a crucial factor in learners' cognitive engagement and performance in mathematics.

The significant difference in cognitive difficulties among Grade 7 learners, when grouped by average family monthly income, suggests that socio-economic status influences learners' ability to process and understand mathematical concepts. This finding is supported by Orbeta and Paqueo (2016), who emphasized that students from low-income households often face limited access to educational resources and academic support, which can affect their cognitive development and learning outcomes. These studies indicate that family income plays an important role in shaping learners' academic opportunities and cognitive performance in mathematics.

Table 7

Differences in the Level of Difficulties of Grade 7 Learners in Mathematics in Affective and Motivational Factors When Grouped and Compared According to Variables

Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Sex	Male	38	39.04	511.500	0.05	0.181	Not Significant
	Female	33	32.50				
Average Family Monthly Income	Lower	52	35.16	450.500	0.05	0.571	Not Significant
	Higher	19	38.29				
Parents' Highest Educational Attainment	Lower	48	38.54	430.000	0.05	0.133	Not Significant
	Higher	23	30.70				
No. of Siblings	Few	40	33.26	510.500	0.05	0.203	Not Significant
	Many	31	39.53				

Table 7 presents the results of the Mann–Whitney U test examining differences in the level of difficulty of Grade 7 learners in mathematics, in the area of affective and motivational factors, across selected variables. The findings show that sex ($p = 0.181$), average family monthly income ($p = 0.571$), parents' highest educational attainment ($p = 0.133$), and number of siblings ($p = 0.203$) did not yield statistically significant differences, as all computed p-values exceeded the 0.05 level of significance. Thus, the null hypotheses stating that there is no significant difference in the level of affective and motivational difficulties in mathematics across learners grouped by sex, family income, parents' educational attainment, and number of siblings are accepted.

These results indicate that learners' affective and motivational difficulties in mathematics—such as fear of failure, anxiety, lack of confidence, avoidance behaviors, and loss

of interest—are experienced similarly across different demographic and family-related variables. Unlike cognitive difficulties, which were significantly influenced by economic conditions in the previous analysis, affective and motivational challenges appear to be more universal. This suggests that emotional and motivational responses to mathematics are shaped more by shared classroom experiences, instructional practices, and assessment-related pressures than by learners' background characteristics.

The acceptance of all null hypotheses in Table 19 also implies that affective and motivational difficulties in mathematics should be addressed through universal, school-wide, and classroom-based interventions rather than group-specific strategies. Since learners across sex, income level, parental educational background, and family size experience similar affective challenges, interventions should focus on reducing fear of failure, fostering a positive classroom climate, promoting a growth mindset, and strengthening learners' confidence and motivation in mathematics.

This finding is consistent with Pekrun (2018), who emphasized that achievement emotions such as anxiety and fear of failure are largely influenced by classroom environment, perceived task difficulty, and evaluative pressure rather than by gender or other variables. Similarly, the lack of significant differences across income groups and parents' educational attainment suggests that affective and motivational difficulties can persist even among learners from more advantaged backgrounds. OECD (2019) reported that mathematics anxiety and fear of failure are widespread across socio-economic groups and often stem from high expectations and performance pressure rather than material deprivation.

Table 8

Differences in the Level of Difficulties of Grade 7 Learners in Mathematics in Learning Environment and Support Systems When Grouped and Compared According to Variables

Variables	Categories	N	Mean Rank	Mann Whitney U - test	Sig. Level	p-value	Interpretation
Sex	Male	38	41.13	432.000	0.024	0.024	Significant
	Female	33	30.09				
Average Family Monthly Income	Lower	52	36.59	463.500	0.05	0.691	Not Significant
	Higher	19	34.39				
Parents' Highest Educational Attainment	Lower	48	36.01	551.500	0.995	0.995	Not Significant
	Higher	23	35.98				
No. of Siblings	Few	40	36.69	592.500	0.749	0.749	Not Significant
	Many	31	35.11				



Table 8 presents the results of the Mann–Whitney U test examining the differences in the level of difficulties of Grade 7 learners in mathematics in the area of learning environment and support systems when grouped according to selected variables. The findings indicate that average family monthly income ($p = 0.691$), parents' highest educational attainment ($p = 0.995$), and number of siblings ($p = 0.749$) did not yield statistically significant differences, as their computed p -values exceeded the 0.05 level of significance. Hence, the null hypotheses stating that there is no significant difference in the level of learning environment and support system difficulties in mathematics when learners are grouped according to family income, parents' educational attainment, and number of siblings are accepted. These results suggest that learners' experiences of classroom support, instructional conditions, and access to help in mathematics are generally comparable across these family-related variables.

In contrast, a statistically significant difference was found when learners were grouped according to sex ($U = 432.000$, $p = 0.024$). Male learners had a higher mean rank (41.13) than female learners (30.09), indicating that male learners experience greater difficulties in the learning environment and support systems in mathematics. Consequently, the null hypothesis that there is no significant difference in the level of learning environment and support system difficulties in mathematics across sex groups is rejected.

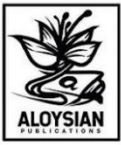
The findings imply that the male learners may have greater learning environment and support-related difficulties. This may be attributed to differences in classroom engagement, help-seeking behavior, and responsiveness to instructional support. Male learners, as observed, are sometimes less inclined to seek clarification or assistance when they encounter difficulties, which can result in a perception of limited support from teachers or peers. In addition, in the research locale, male learners are often expected by their families to assist with farm work, particularly during planting and harvesting seasons, which may limit their time and focus for academic tasks.

The significant difference in the level of difficulty in the learning environment and support systems across sex groups suggests that male and female learners may perceive classroom support differently. This finding is supported by Bernardo and Ismail (2015), who reported that Filipino students' academic engagement and perceptions of classroom support can vary by gender due to differences in classroom participation and interaction with teachers and peers. Also, Dela Cruz (2019) found that male and female students demonstrate different patterns of classroom participation and help-seeking behavior, which may influence how they perceive instructional support and peer assistance. These studies indicate that gender-related differences in classroom interaction may shape learners' experiences of support within the learning environment.

IV. CONCLUSION

Based on evidence, learners in Grade 7 in the subject investigation mainly came from economically strained families. Parents are less educated, and most have modest household incomes. This may suggest that learners can be deprived of access to academic support, learning resources, and educational guidance at home.

The Grade 7 learners reported that their mathematics difficulties are limited to mild and moderate levels, which suggests that there is a general, constructive classroom conception and examples; however, a shortage of probing indicates the importance of fostering a psychologically safe, inquiry-capacity classroom environment. These findings imply that instructional interventions should prioritize



strengthening foundational numeracy skills, reducing mathematics anxiety, and promoting active classroom engagement in increasing learners' confidence and problem-solving competencies.

From the results, generally, some problems in mathematics are similar across age groups in virtual demography, even though there are certain tendencies. Mostly, these challenges surface because materials and resources in education are scarce. Males and large family sizes were associated with greater tendencies to avoid or engage less, while fear of failure seems widespread across all groups. To boost learning, the factors accentuate the difficulties of learning.

In conclusion, findings have established a significant role for demographic factors in the initial learning programs. Lower-income learners appeared to be struggling in understanding and absorbing mathematical concepts. That being said, emotional barriers caused by affective and motivational issues were not significantly noted among the demographic variables, subjecting anxiety or fear of failure to the widest range. The learning environment and support systems indicated these issues come along with sex division, as male learners had to create their own costumes in classroom engagement and quasi-initiative in seeking help. Based on this, intervention strategies should be framed in a cascading manner, with both targeted support for economically disadvantaged learners and broader initiatives to provide a 'band aid' for emotional barriers, bringing them down and, in their place, developing inclusive classroom support systems.

Instructional Intervention Plan

Introduction

Mathematical proficiency is indispensable for sharpening learners' logical reasoning, problem-solving, and academic skills. However, the study shows that Grade 7 learners face moderate cognitive hurdles, particularly in mental computation and problem comprehension, as well as affective barriers. One clear observation from this is that, despite the supportive learning environment, learners are reluctant to seek help and remain more passive during the teacher's instruction. Implicit in this is an urgent need for a structured intervention to address cognitive weaknesses, bolster learners' confidence, and create an all-embracing, supportive mathematics learning environment.

Rationale

The study shows that learners struggle with mental computation, understanding word problems, explaining solutions, and fear of failure in mathematics. Additionally, learners from lower-income families experienced increases in cognitive difficulties, while male learners had a larger number of challenges with the classroom environment and with support systems. Left unattended, these difficulties can widen learning gaps and reduce learners' motivation and academic performance. Targeted instructional intervention is therefore necessary to improve foundational early skills, reduce mathematics anxiety, promote help-seeking behaviors, and ensure more equitable academic support. This intervention is important for promoting inclusive education and is essential to achieving the Department of Education's goals, with focus on improving numeracy and learner engagement.

Objectives

The intervention plan aims to:

- 1.Improve learners’ mental computation and numerical fluency;
- 2.Enhance comprehension and problem-solving skills in mathematical word problems;
- 3.Strengthen learners’ ability to explain and justify mathematical solutions;
- 4.Reduce fear of failure and mathematics anxiety;
- 5.Promote active participation and help-seeking behavior in mathematics classes.

INSTRUCTIONAL INTERVENTION PLAN

Areas of Concern	Findings	Intervention Strategies	Time Frame	Persons Involved	Resources Needed	Estimated Budget	Success Indicators
Cognitive Difficulties	Errors in mental math	Daily number talks; mental computation drills; estimation exercises; math games for fluency	Daily/ongoing	Math teachers	flashcards, activity sheets	₱1,500	Improved speed and accuracy in mental computation
	Difficulty understanding word problems	Teach problem-solving steps; contextualized examples; vocabulary scaffolds; think-aloud modeling	Weekly	Math teachers	localized problem sets	₱1,000	Increased comprehension and correct solutions
	Difficulty explaining solutions	Math journals; peer explanation; oral recitation; “explain your answer” routines	Weekly	Teachers, learners	notebooks	₱1,000	Improved ability to articulate solutions
Affective & Motivation	Fear of failing in math	Growth mindset feedback; low-	Ongoing	Teachers	printed motivational	₱1,000	Increased confidence and

Areas of Concern	Findings	Intervention Strategies	Time Frame	Persons Involved	Resources Needed	Estimated Budget	Success Indicators
al Factors		stakes quizzes; praise effort; error-friendly classroom climate			materials		participation
	Loss of interest when problems are hard	Scaffolded tasks; differentiated activities; gamified learning; reward systems	Monthly	Teachers	activity materials	₱1,000	Increased task persistence and engagement
Learning Environment & Support Systems	Avoid asking questions when the lesson is unclear.	Anonymous question box; think-pair-share; peer tutoring; cooperative learning groups	Weekly	Teachers, peer tutors	suggestion box	₱1,000	Increased student inquiries and participation
	Hesitation in help-seeking	Establish supportive classroom norms, teacher check-ins, and small group guidance	Ongoing	Teachers	none	—	Improved help-seeking behavior

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