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STUDENTS IN MATHEMATICS LEARNING: EXPLORING LIVED EXPERIENCES IN PRIVATE HIGH SCHOOLS

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ABSTRACT

This study explored the lived experiences of junior high school students in learning mathematics. Using a qualitative descriptive phenomenological design, data were gathered through in-depth interviews with ten Grade 9 students from a private high school in Bukidnon, Philippines. Participants were selected based on varying levels of mathematics anxiety and willingness to share their experiences. Interview data were analyzed using Colaizzi's (1978) method of phenomenological analysis. Finding revealed four major themes: (1) challenges with teaching and learning, (2) proactive approaches to overcoming challenges in mathematics, (3) performance pressure, and (4) motivation and growth mindset. Results showed that students commonly experienced anxiety due to inconsistent teaching practices, complex mathematical concepts, discrepancies in the difficulty level between classroom examples and assessments, difficulty with problem-solving, and pressure during recitations and examinations. These experiences negatively affected students' focus, confidence, and clarity of thinking, often leading to confusion, nervousness, and fear of making mistakes. However, findings also revealed positive outcomes, as some students responded to anxiety by becoming more motivated, attentive, and persistent in their learning. These results suggest that greater attention to instructional coherence, supportive classroom practices, and aligned assessment approaches may help reduce mathematics anxiety while fostering student confidence, engagement, and sustained motivation in mathematics learning.

Keyword: mathematics anxiety, lived experiences, coping mechanisms, academic performance, phenomenology

1. INTRODUCTION

Mathematics plays an essential role in many aspects of life and serves as a foundation for critical thinking and problem-solving. However, many students experience significant challenges when learning mathematics, including anxiety and disengagement (Ashcraft & Krause, 2007). This anxiety can manifest in various ways, affecting cognitive processes, emotional well-being, and ultimately, academic performance. Yuliani, Suryadi, and Dahlan (2019) reported that junior high school students generally experience moderate mathematics anxiety, which is heightened during tests and while completing mathematics tasks. They also found that anxiety tends to increase as students' progress to higher grade levels, with many students' expressing reluctance to pursue careers involving mathematics.

Mathematics anxiety has been shown to influence students' attitudes and motivation toward learning. Ashcraft (2002) noted that anxiety negatively affects the affective domain, leading to decreased motivation and avoidance of mathematics activities. Similarly, Ramirez, Gunderson, Levine, and Beilock (2012) found that anxiety can hinder working memory, a key cognitive function for problem-solving, reducing students' ability to learn and perform effectively. These challenges highlight the need for educators and researchers to better understand students lived experiences within mathematics classrooms. In addition, traditional classroom practices that rely heavily on direct instruction may fail to engage learners who benefit more from interactive and collaborative learning environments (Dubinsky & Hamid, 2024). In contrast, student-centered strategies such as collaborative problem-solving, discussion-based learning, and technology-enhanced instruction have been found to improve engagement, increase confidence, and reduce feelings of alienation (Garrett, 2008; Alrajeh & Shindel, 2020).

Despite existing research on mathematics anxiety and academic performance, a gap remains in understanding students' lived experiences in mathematics classrooms, particularly how they perceive, navigate, and cope with these challenges. During the junior high school years, students may experience heightened anxiety due to academic pressure, fear of failure, and perceived difficulty of mathematical concepts. Thus, the primary aim of this study was to explore the lived experiences of students in mathematics classrooms, with particular attention to the challenges they encounter and the coping strategies they employ. As Lepore (2024) emphasized, examining students' lived experiences provides valuable insight into both the cognitive and emotional dimensions of learning. By exploring students' perceptions, emotions, and behaviors related to mathematics, this study seeks to contribute practical knowledge to mathematics education and to inform the development of inclusive, student-centered approaches that foster confidence, motivation, and resilience among learners.

To better understand the complex experiences of students in mathematics, this study is anchored in established psychological and educational frameworks. Cognitive-Behavioral Theory explains that mathematics anxiety arises from negative thought patterns and irrational beliefs, which can be mitigated through cognitive restructuring interventions (Adamou, 2020). The Self-Determination Theory highlights the role of autonomy, competence, and relatedness in motivating students to select coping strategies that enhance their confidence and independence. Additionally, the Transactional Model of Stress and Coping provide a framework for understanding how students respond to anxiety-inducing situations, such as mathematics tasks, by employing flexible coping strategies (Lonser, 2020). Together, these frameworks support a holistic exploration of students' emotional, cognitive, and behavioral experiences in mathematics classrooms.

2. RESEARCH QUESTIONS

The study explored Junior High School students' experiences in mathematics at San Isidro College of Malaybalay Bukidnon, Inc. for SY 2023–2024. Specifically, it sought to answer the following questions:

1.What are the students' experiences in mathematics?

2.How do these experiences affect their academic performance in school?

3. What themes characterize the lived experiences of students in learning mathematics?

3. METHODOLOGY

This study used Colaizzi (1978) Method of Data Analysis in Descriptive phenomenology as discussed in the study of Praveena and Sasikumar (2022) entitled Application of Colaizzi's Method of Data Analysis in Phenomenological Research. Phenomenological research is a qualitative method that investigates individual perceptions, beliefs, and subjective experiences, examining situations from the perspective of the individual to uncover the particulars and nuances of a phenomenon through inductive methods like interviews (Lester, 1999). Descriptive phenomenology aims to provide a pure, objective description of the phenomenon being studied without imposing interpretations, as researchers engage in bracketing to maintain objectivity and capture the essence of the lived experience (Delve. Ho, L., & Limpaecher, A., 2022); this often utilizes various data collection methods like interviews, observations, journaling, and photovoice to explore the different layers of the subjective experience (Ajudua, 2023), with an overall emphasis on understanding specific phenomena through the unique perceptions and first-hand accounts of the research participants.

The participants of the study were ten (10) Grade 9 students enrolled in a mathematics class at San Isidro College of Malaybalay Bukidnon, Inc., Philippines, for the school year 2023-2024. The study focused on a single, heterogeneous math class, meaning students have varying learning styles and prior knowledge. Selection criteria include grade 9 junior high school students who have mathematics anxiety. This was determined through a mathematics anxiety survey questionnaire. Lastly, they are willing to voluntarily participate and provide honest and insightful perspectives on their experiences and coping strategies. The researcher used codenames to represent the students throughout the study to ensure participant confidentiality. Participants 1, 2, 3, and 4 reported high levels of anxiety; participants 5,6 and 7 had moderate levels of anxiety, and 8,9 and 10 had low levels of anxiety.

Participant's real names were not disclosed. Informed consent forms were prepared following the ethical guidelines and were provided to all participants. These forms clearly outlined the purpose of the study, the procedures involved, and participants' rights, including their right to withdraw from the study at any time without penalty.

This study used open-ended interview questions. At the beginning of the study, the researchers introduced themselves to potential participants and explained the study's goals, procedures, and ethical considerations. They clarified that participating was entirely voluntary, and participants had the right to leave the study at any time without any negative consequences. After the introduction, the researcher gave each potential participant an informed consent form and carefully explained what was written in it. They answered any questions or concerns the participants had. The participants were informed about their rights regarding keeping their information private and anonymous and how their data would be used for research purposes. The researcher asked the participants to sign the consent form voluntarily, indicating their agreement to participate in the study. The researchers also asked the potential respondents to ask their parents to sign the parent's consent form. Following that, the researcher reassured participants regarding the protection of their personal information and responses. They emphasized the strict measures in place to maintain privacy. Participants were assured that any identifying details would be carefully removed from transcripts and research reports to ensure their anonymity. Before beginning the interview, the researcher guided participants through the process and explained the types of questions that would be asked and how long the session would last. Participants were encouraged to freely share their experiences and perspectives while being reminded of their autonomy in expressing themselves.

Three subject matter experts (SMEs) in the field of Education reviewed and validated the research questions and interview guide for this study. An assessment form, organized into three key areas, was used to evaluate the clarity, relevance, and comprehensibility of the instrument. The SMEs indicated whether each question was essential or non-essential and provided remarks to guide improvement. Their feedback offered valuable insights for refining the interview questions, and several adjustments were made accordingly. Additionally, a detailed research proposal, including the study objectives, methodology, potential risks to participants, and measures to protect their rights, was submitted to the SMEs for further review and validation.

The researchers examined the students lived experiences using Colaizzi's Method in Descriptive Phenomenology. The following seven steps were used in exploring the lived experience of the students in mathematics:

Step 1: Transcribing all the subjects' descriptions – the researcher read all of the transcribed data several times to get a sense of the experiences and stories shared by the participants. In this stage, the researchers familiarized themselves with the data or information by reading through all the participant accounts several times. This is because Colaizzi (1978) suggested that the investigator read the audiotape many times to understand the content clearly.

Step 2: Extracting significant statements - As per Colaizzi (1978), the researcher then extracts significant phrases and statements from the transcript that form the whole meaning of the experience. We read and reread the transcript and analyzed each one to identify significant statements. These statements were written separately for each participant and coded as transcript page number and line number. We only extracted statements that are relevant to the objectives of our study.

Step 3: Formulation of meanings - In this step, Colaizzi (1978) recommends that the researcher formulate more general restatements or meanings for each significant statement from the text. With this, we framed the meanings in an important statement. Each fundamental meaning was coded as a category because it reflects a thorough description. We coded the formulated meanings, which were coded, categorized, and given to expert researchers to check for the correctness of these processes and the consistency of the meanings. We also did a member check among ourselves to see if we have the same coding.

Step 4: Organization of formulated meanings into clusters of themes and themes - After obtaining formulated meanings from significant

statements, the researchers arranged them into clusters of themes. These theme clusters were shrunken into emerging themes. All these themes are internally convergent and externally divergent, which implies that each "formulated meaning" came only from one theme cluster. These clusters of themes and the final themes were then given to the expert researcher to check their accuracy. We have created a thematic map on this theme.

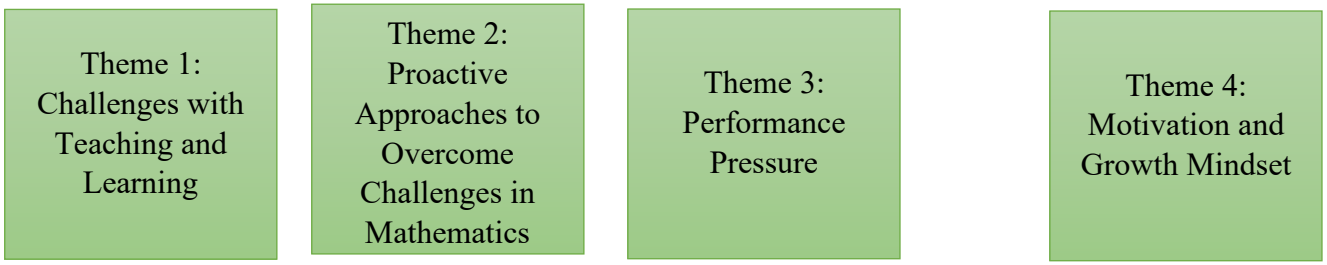
Step 5. Exhaustively describing the Phenomenon - In this stage of Collaizi's analysis, the researcher will integrate all the resulting ideas into an exhaustive description of the Phenomenon. We identified emergent themes that were explained in an exhaustive description. It was achieved by combining all the theme clusters' emergent themes and formulating meanings into a description to create an overall structure. Afterward, expert researchers were allowed to examine the results of the findings in terms of richness and completeness to give the proper description and to validate that the exhaustive description shows and describes the challenges of students' experiences of mathematics anxiety and coping mechanisms.

Step 6. Describing the fundamental structure of the phenomenon - In this step, the researchers decrease or reduce the study results to avoid repetitions and to clearly and concisely describe the students' experiences of mathematics anxiety and coping mechanisms.

Step 7. Returning to the Participants to validate the findings from the study participants - This step aimed to validate study findings using "member checking." This is the final stage of data analysis, which involves returning to the participants for a follow-up interview to elicit the representativeness of the emerged Phenomenon with their experience. The researcher returned the research findings to the participants to discuss the study's results.

4. RESULTS

The data presented in this section are based on the interview conducted by the researchers on ten Grade 9 students San Isidro College of Malaybalay Bukidnon, Inc. After every interview, the codes were fully identified by the researchers. The information was categorized and recorded. Four significant themes emerged following a phenomenological data analysis technique of the data gathered.



5.DISCUSSION

The following is a list of the themes and codes that came out of the interviews.

Theme 1: Challenges with Teaching and Learning

The student's experiences when joining or attending mathematics classes reveal challenges with teaching and learning. These challenges stem from inconsistencies in teaching and variations in teaching quality, which make it difficult for students to comprehend certain mathematical concepts fully. As a result, students feel inadequate compared to their faster classmates, leading to frustration. Additionally, these difficulties contribute to a lack of confidence and an overall struggle with understanding the material. The students also face difficulties that hinder their ability to focus, experiencing moments of distraction during class that disrupt their understanding of the material being taught. This challenge is frequently encountered by students eager to engage with the course content. The struggle to maintain focus despite a genuine desire to learn highlights the widespread nature

of this problem. As students navigate various academic tasks, sustaining attention becomes vital for effectively processing and retaining information. Therefore, it is crucial to address the factors that impede focus and create an environment that supports learning and maximizes students' academic potential.

The following statements from the participants support this theme*:*

"Math isn't simple at all. I know math, but if the teaching isn't consistent, I easily forget, sir." Participant 1

"It probably just depends on the teaching." Participant 4

"… there are some subjects where some math lessons are easy for me to understand, but there are others where I get confused, especially those topics that have very lengthy solutions, especially now in this school year when there have been significant changes in Math. It's become even more difficult for me." - Participant 6

"I find mathematics very difficult, especially when dealing with numbers. I easily got confused. .. Because I immediately get confused, it is like I'm slower compared to my classmates who understand quickly". - Participant 7

"The real problem is just one: the examples given are too simple, but then on the quiz, there are fractions." – Participant 1

"I feel unsure, sir. I really get confused with questions, especially with problem-solving, because I keep asking myself how to do this... then I understand, sir... but when I get home, I forget it immediately." – Participant 7

"I'm not quick at mental math. I feel pressured by my classmates when we're solving problems together because they might finish before me. But it's okay if I answer on my own." – Participant 8

"Its okay sir , but sometimes, sir, when I recite, I suddenly space out... then when I come back, I've missed what was on the board... What's happening... and I try to write... and understand the topic... but then I get confused." – Participant 3

I see, sir. When I look at the board, my mind goes blank, like, I want to learn but I can't focus in class - Participant 6

The theme highlights students' difficulties in their educational journey. These difficulties have been made worse by variations in the quality of instruction and teaching methods, which make it difficult for students to understand mathematical ideas. Students need clarification and help understanding mathematics when there is a lack of clarity and uniformity in instruction. The answer from Participant 6 most likely results from these difficulties. The quality of schooling has a significant impact on how well students understand mathematics. Different teaching standards make it difficult for students to understand mathematical ideas, which causes frustration and hinders learning. Some mathematical concepts are complex for students to understand, mainly when they include complex operations or numerical computations. These challenges could result from poor foundational knowledge or inadequate teacher explanation. Students may feel inferior to their friends who understand mathematical topics more quickly, which can lead to negative feelings.

Furthermore, Participant 1 also highlights a discrepancy between the simplicity of class examples and the complexity of quiz questions, specifically related to fractions, indicating a need for more alignment in instruction. Participant 7 expresses uncertainty and confusion with problem-solving, implying a need for more explicit instruction and better reinforcement strategies. Additionally, Participant 8 shares concerns about needing to be quicker in mental math and feeling pressured by classmates during collaborative problem-solving, illustrating the impact of individual pacing and social dynamics on students' confidence and performance. Lastly, Participant 3 and Participant 6 share experiences of losing focus and struggling to concentrate during class. Participant 3 mentions "spacing out" while engaging with material on the board, leading to missed information and confusion upon returning to attention. Participant 6 describes experiencing a blank mind and difficulty absorbing information from the board. Both participants desire to learn, but their inability to focus hinders their engagement and understanding of the lesson. These responses highlight how lapses in attention disrupt the learning process, resulting in missed opportunities to comprehend and engage with the curriculum. To address these challenges, strategies are needed to improve attentional

control and minimize distractions, creating an environment that supports effective learning.

This result can be anchored on the study of Yang & Kaiser (2022), who found that teachers' content knowledge, pedagogical content knowledge, and beliefs positively impacted instructional quality associated with improved student mathematics achievement. They also identified an indirect positive relationship between teachers' professional competence and student learning, mediated through instructional quality. Similarly, Llinares (2021) defined *instructional quality* as a multifaceted construct influenced by teacher knowledge, lesson design, classroom interactions, cognitive demand, and contextual factors. Llinares emphasized that understanding the teacher knowledge-instructional quality relationship is crucial for designing effective mathematics teacher preparation programs focused on developing prospective teachers' ability to enact high-quality instruction.

The study by Boaler (2002) also supports the various teaching and learning challenges in mathematics highlighted by the participants. Boaler found that traditional, procedural-focused instruction often leaves students struggling with more complex, real-world problems, as seen in Participant 1's observation of a discrepancy between simple class examples and complex quiz questions. The study also showed that problem-solving-oriented approaches, while more effective for deeper understanding, can present challenges that require more explicit instruction and better reinforcement strategies, as expressed by Participant 7's uncertainty. Additionally, Boaler's research underscored the impact of individual pacing and social dynamics on students' confidence and performance, aligning with Participant 8's concerns about mental math speed and peer pressure during collaborative work.

The literature review by May and Elder (2018) on media multitasking and academic performance provides relevant insights to support the experiences of Participant 3 and Participant 6, who described losing focus and struggling to concentrate during class. The review found that media multitasking, or the concurrent use of multiple digital devices and media sources, is consistently associated with poorer academic performance, leading to decreased attention, information recall, and understanding of course material. Specifically, the researchers explain that the constant switching between digital stimuli trains the brain to be in a state of divided attention, making it increasingly difficult for students to focus on a single task or information source, disrupting the learning process, and resulting in missed opportunities to comprehend the curriculum entirely. This aligns with Participant 3's experience of "spacing out" and Participant 6's "blank mind" when engaging with classroom content. To address these challenges, May and Elder emphasize the need for interventions that minimize media multitasking and promote more focused attention during academic activities, supporting the above call for strategies to improve attentional control and create a learning environment that facilitates effective engagement and understanding.

Theme 2: Proactive Approaches to Overcome Challenges in Mathematics

The theme is characterized by students' recognition of the importance of attentive listening for better understanding despite difficulties retaining information. When faced with mathematical challenges, these students are willing to utilize various strategies, including using calculators, watching supplementary learning videos, and seeking assistance from family members or online resources like YouTube tutorials. They express comfort in familiar environments for problem-solving and learning and show a balance between independent efforts and seeking support from others. The students also exhibit a careful, systematic approach to considering math problems, thinking through them, finding ways to answer correctly, and reviewing the material for improved understanding. Additionally, they express confidence when the material is promptly taught, and they can answer questions on the same day, further highlighting their proactive engagement with the subject matter.

Learning tools and strategies are various methods and resources that students use to improve their learning and understand academic subjects more effectively. One such strategy is using a calculator to solve complex math problems. A calculator helps students do calculations quickly so they can focus more on understanding the main ideas instead of spending much time on basic math. Another helpful tool is watching videos as an extra way to learn. Videos can show things visually, give real-life examples, and explain step by step. They

work well for different learning styles and make learning enjoyable.

This theme also shows that student face challenges with their assignments and look for support from their family or use online resources like YouTube videos and educational apps to understand things better. They take action to deal with their assignment difficulties by using outside help and learning tools. It's also crucial for them to feel comfortable in a place they know well when they're trying to solve problems and learn. This means that having a good study environment helps them feel confident and get more work done. Asking family members, especially parents, for help shows that having support from family is essential when they have trouble with assignments and want to do well in school. They also do their work but use help from family and online resources, showing that they can adapt and find different ways to handle assignment challenges.

The responses from the participants support this theme:

"… I'll understand, but when I get home, I'll forget it right away." – Participant 10

I'm not really comfortable, actually. Sometimes it's because I don't understand math well, but I get it when I listen carefully and understand it. I struggle to solve - Participant 5

"When I encounter such math problems, sir, I really take my time to think through it, and if needed, I grab a calculator." – participant 2

….watch those tutorial videos on YouTube, sir. – participant 6

"I will watch a video, sir." – participant 3

"It's difficult to do the assignment, sir, but I make sure to find a partner who can teach me so I can understand it better." – Participant 2

"I am just in my place, sir, so I'm a bit comfortable... and it seems like there's more time as well, sir, to do problem-solving." – Participant 3

I seek help from my sister to explain them to me - Participant - 5

"I'll do my assignment... I'll just search for something and ask my dad to help me with." - Participant 7

"I still haven't fully understood the topic, so I just watch YouTube videos to supplement my knowledge." – Participant 8

Participant 10's statement highlights a common obstacle learners face: retaining recently learned information. Despite initially understanding the material during class, the participant expresses frustration with quickly forgetting it once they return home. This experience reveals a difference between short-term comprehension and long-term retention, indicating the importance of employing effective memory strategies and reinforcement techniques to solidify learning. Participant 5's response explores the discomfort experienced in mathematics, attributing it partly to difficulties understanding the subject matter. However, the participant demonstrated a proactive approach by recognizing the significance of attentive listening in improving understanding. Despite these efforts, they encounter difficulties with problem-solving, suggesting a need for further development in this area. The Dunlosky et al. (2013) study supports the challenges faced by Participant 10 and Participant 5. The research found that some standard study methods, like re-reading and highlighting, could be more effective for helping students remember information long-term. Instead, more active strategies like practice testing and mixing different problem types are better for improving understanding and problem-solving skills. This matches the experiences of Participant 10, who quickly forgot material they initially understood, and Participant 5, who needed help with math comprehension and problem-solving despite their efforts. The study suggests that more than simply attending to information during class is necessary - students need to use the proper learning techniques to solidify knowledge in their memory over time.

Participant 2 shows the importance of seeking support by finding a study partner to enhance understanding. This aligns with the work of Johnson and Johnson (1999), who have extensively studied cooperative learning and peer interactions and focused on the benefits of collaborative learning structures, such as group work and peer tutoring, in enhancing understanding and academic achievement. Participant 3 emphasizes the comfort and ease of working on assignments in familiar surroundings, positively affecting problem-solving and

productivity. Participant 5 values the assistance of their sister in understanding tasks, highlighting the significance of familial support. Participant 7 recognizes the role of parental help in overcoming assignment challenges. Based on the work of Hoover-Dempsey, Battiato, Walker, Reed, DeJong, and Jones (2001), parents get involved in their children's homework for a few key reasons - they feel they should be involved, they believe their involvement will have a positive impact, and they perceive that their child or the child's teacher wants them to be involved. Parents' participation takes on many forms, from setting up structures to support homework completion, teaching to promote understanding, and helping develop the child's learning strategies. This parental involvement primarily influences student success by modeling effective behaviors, encouraging, and offering instruction. It supports crucial student qualities tied to achievement, such as positive attitudes towards homework, perceptions of personal competence, and self-regulatory skills.

Participant 8 proactively uses YouTube videos to supplement their learning and improve understanding. Gyeltshen and Dorji (2023) studied using YouTube as a learning tool. Their study concludes that YouTube videos can enhance Mathematics instruction and improve student performance. However, carefully selecting videos and relevant links is essential for successful integration. Moreover, the study by Amergus, C., Wahyuni, M., and Zulfah, Z. (2021) concluded that the use of YouTube media significantly affects the mathematical understanding ability of seventh-grade students.

Participant 2 uses a calculator to solve problems. The study by Barkatsas, Kasimatis, and Gialamas, V. (2009) supports using learning tools and strategies described in the statement, such as calculators and instructional videos. The researchers found that calculators allowed students to focus more on conceptual understanding by offloading tedious calculations, aligning with the statement's description of how calculators help students concentrate on the main ideas. Additionally, the study demonstrated the benefits of multimedia resources, like videos, in catering to diverse learning styles and making learning more engaging, as outlined in the statement. Furthermore, Barkatsas et al. highlighted how integrating various learning tools and strategies can enhance student flexibility and efficiency in academic pursuits.

Theme 3: Performance Pressure

The theme shows that students feel nervous and worried in different situations at school. They feel scared when speaking in front of others, concerned about not being good enough at math problems, and anxious when teachers ask them questions. These feelings can make it hard for them to communicate, solve problems, and participate in class. Sometimes, they forget things quickly after learning them, which makes them even more worried about remembering information and doing well on tests. Exams also make them feel anxious and stressed. They worry about the exam process, their grades, and their future. Thinking about exams makes them nervous during the actual test. They are afraid of giving wrong answers and are unsure of themselves. They also get anxious because they need to remember essential formulas or information, which makes it difficult for them to concentrate. Anxiety during exams can also come from worrying about how well they studied and if they are ready. They feel stressed about not knowing the answers and worry about how they will perform. These worries show that exams can be stressful and put much pressure on students. They need to find ways to cope with the anxiety and get support to help them manage it.

This theme is supported by the following responses from some of the participants:

"I get nervous during oral recitations, especially when I'm asked to stand in front because I might not have an answer." - participant 1

"I feel a bit Nervous. I'm afraid I might get called on and not know how to solve that question." Participant 2

"I sometimes get nervous, sir." - Participant 3

"I get nervous during classes; teachers might ask questions." - Participant 4

"I'm not quick at mental math. I feel pressured by my classmates when we're solving problems together because they might finish before me. But it's okay if I answer on my own. - Participant 8

"I get nervous because I can't catch up with the lesson, sir. Unless there's a formula provided in the

lesson, I can figure the problem out, sir." - Participant 6

"I feel unsure, sir. I really get confused with questions, especially with problem-solving, because I keep asking myself how to do this... then I understand, sir... but when I get home, I forget it immediately." – Participant 7

"I worry about the exam if I'm not sure about my answer." – participant 4

I see, sir. When I focus my mind on the exam, I know I'll struggle with that subject for sure. So sometimes, sir, I get curious because I'll get nervous when I take the exam. That's why, sir. I also find everything a bit difficult sometimes. – participant 6

"Then I start to worry, sir, because my other answers have incorrect solutions, but I can already manage it." Anxiety about incorrect answers – participant 7

"I also get nervous because I might forget the formula." – participant 9

Sometimes, when I have a mental block, sir, because of nervousness, I don't know what to do anymore. Like, what should I do? Which formula should I use? Like that. – participant 10

Participant 1 expressed nervousness in oral recitations, fearing embarrassment or perceived failure. Participants 3 and 4 also admit to experiencing anxiety in academic situations, such as class discussions or answering teacher questions. Participant 8's response focuses on performance pressure during collaborative problem-solving activities, feeling pressured by classmates' quicker abilities. This comparison with peers and fear of lagging behind contributes to a sense of inadequacy and heightened anxiety during group activities, contrasting with the comfort of individual work. These responses reveal various anxiety and performance pressures, including fear of public speaking, academic performance concerns, and social comparison. A holistic approach is needed to address these issues, promoting a more inclusive learning environment.

This finding is supported by the study of Cassady (2010), who found that students with high test anxiety felt very nervous and worried about embarrassment or failure during class discussions and group work. These students also felt inadequate compared to classmates who seemed to perform better. The adverse effects of this anxiety were worse during interactive, evaluated activities rather than individual work. This matches the participants' experiences of comfort with individual tasks but anxiety in group situations due to social comparison and pressure to perform. Cassady's research shows the need for a more supportive, inclusive approach to addressing these anxiety issues in academic settings. In connection to this, the study by Yusefzadeh, Iranagh, and Nabilou (2019) found that providing students with training on effective study strategies and exam preparation helped reduce their test anxiety levels compared to a control group. This reduced anxiety was then associated with improved academic performance on the exams. The researchers concluded that targeted interventions to address the root causes of evaluation anxiety, like lack of preparation, can help create a more supportive, less pressured academic environment.

The anxiety about testing or exams may impact students' grades in high-stakes examinations. This effect could either be positive or negative. Kader (2016) stated that anxiety about an upcoming examination could increase motivation, focus, effort, and, subsequently, higher grades. This may explain why, even though Participant 7 is having anxiety, the student can manage. However, other researchers have stated that the effects could be devastating. The difficulties students encounter may lead to worry and an inability to concentrate (and/or a tendency to procrastinate) in the weeks and months building up to the examination period, limiting their ability to work and revise material effectively (Cassady, 2004; Howard, 2020; Keogh et al., 2004; Putwain & von der Embse, 2018). This is evident in the responses of Participants 4, 6, 9, and 10. The difficulties students encounter may also manifest during the examination, as test anxiety can cause problems like an inability to focus or forgetting important content, leading to 'going blank' in the exam (Doctor & Altman, 1969).

Theme 4: Motivation and Growth Mindset

The theme highlights students' unwavering commitment to continuous improvement and perseverance in their mathematical learning journey. They actively strive to enhance their skills, recognizing that perseverance and effort are crucial for improved understanding. Despite concerns about upcoming challenging lessons,

students remain determined to succeed, demonstrating resilience in the face of difficulties. Moreover, despite past struggles, they find genuine interest in problem-solving activities, showcasing their enduring enthusiasm for mastering mathematical concepts. In addition, this theme also highlights how students approach exam studying and their sense of self-assurance in managing the process. Despite feeling nervous, students diligently prepare before exams, relying on their understanding and recollection of class discussions rather than mere memorization. While occasional material forgetting may occur, students mitigate this challenge by reviewing and double-checking their answers before submission. They prioritize providing answers based on understanding, demonstrating their commitment to critical thinking and problem-solving skills.

Moreover, They focus on the material they learned before the exam, especially the formulas and equations. They take their time to understand and apply them, showing they are careful and thorough in their preparation. Some students feel confident using their notes and formulas during the exam. They know how to use the resources available to them to do their best.

This theme is supported by the following responses coming from the participants:

"In my experience with math, it felt like I was still developing. But I want to excel, so I strive in subjects that challenge me, including math. "– Participant 1

"Math can be difficult to answer, but I really make an effort to understand the lessons being taught." – Participant 2

"I'm looking forward to what the next lesson will be, but I'm worried it might be more difficult." – Participant 8

"In the classroom, it's all right, sir. It's actually quite interesting because of problem-solving like that. When I was in grade 8, I wasn't very interested because I couldn't quite understand, sir, you know. And when I was in grade 7, I wasn't really attentive at that time." – Participant 10

"I'm still nervous, sir, but I really study before the exam. I can handle it." – participant 3

"I rely on what I understand and recall from what the teacher discussed." Yes, sir, sometimes I forget, then I'll review it again and double-check my answer before submitting it." - participant 5

"If what I really think is what's being asked, sir, then that's the answer I'll provide." - Participant 5

"I focus solely on what was taught before the exam. I think about how to break down and apply those formulas we learned." – participant 2

"I'm not afraid to answer the exam if it's open notes because the formulas can be seen." - participant 4

The participants exhibit a proactive approach toward their mathematical education by desiring to excel and improve. Every response emphasizes a dedication to one's development as a student, whether through working hard in difficult subjects, trying to understand lessons, or foreseeing and preparing for future challenges. In addition, the participants' insights regarding their previous arithmetic experiences—such as disinterest or difficulty understanding—emphasize the dynamic character of learning and the possibility of progress over time. These observations imply an awareness of previous setbacks and an eagerness to move past them, suggesting a constructive path toward improved mathematical proficiency.

Participants 1 and 2 indicate a strong desire to excel academically, especially in challenging courses like math. Despite the inherent complexity of math, they see their experience as a path of growth and development, exhibiting perseverance and a proactive approach to learning. Participants 8 and 10 expressed mixed emotions about upcoming lessons, expressing both excitement and apprehension. Despite concerns, they remain optimistic and open to learning opportunities. Participant 10's transformation from disinterest to active participation in problem-solving activities exemplifies continuous improvement and perseverance in math learning, overcoming past challenges.

This could be anchored on Boaler, J., Dieckmann, J., LaMar, T., Leshin, M., Selbach-Allen, M., Perez, G. (2021) and Burnette, J., Billingsley, J., Banks, G., Knouse, L, Hoyt, C. & Pollack, J (2022) who both found that teaching students about growth mindset led to increased motivation, persistence, and academic performance. The researchers identified critical elements of growth mindset interventions, like directly teaching the concept and providing application opportunities, that

enhanced students' confidence and internal drive to learn - core aspects of the motivated, improvement-focused mindset described in the text. The long-lasting impact of these growth mindset approaches further underscores their transformative power, aligning with the observed shift from disengagement to eager participation.

Participant 3 admits to feeling nervous before exams but still prepares by studying hard, showing they can handle the stress of exams. Participant 5 focuses on understanding and remembering what was taught in class when studying for exams. They also emphasize the importance of reviewing and checking their answers to avoid mistakes. Moreover, Participant 5 prioritizes answering questions based on their accurate understanding rather than guessing or memorizing, which shows their commitment to critical thinking and problem-solving skills.

Make It Stick**:** The Science of Successful Learning by Brown, Roediger III, and McDaniel (2014) explores effective study strategies that promote long-term retention and understanding of course material. The authors argued that a common myth about learning is that re-reading is a practical study strategy – but it's not. Re-reading gives students confidence that they know something when they don't. In "To Learn, Retrieve," the authors describe retrieval practice research in authentic classrooms. Experiments in a K-12 school district demonstrated that retrieval practice raised students' grades from a C+ to an A-, with benefits lasting for an entire school year.

Moreover, they showed that research demonstrates that simply spacing out or rearranging concepts to be taught can yield a significant boost in learning. The authors also encourage readers to "Embrace Difficulties" during learning. Another method highlighted to address these challenges is a growth mindset—the belief that learning and intelligence are malleable rather than fixed. A growth mindset encourages students to focus on learning and growing with increasing challenges rather than just performance at one point. This approach has been shown to increase student learning and persistence over time.

On students' test anxiety, Kaminske (n.d) found that the relationship between test anxiety, working memory, and exam performance is complicated! One thing that struck her about her study was that the students who were anxious about the exam had every reason to be anxious. They were not adequately prepared, and their level of anxiety reflected that. She continued, "This means we might reframe test anxiety as a sort of early warning system for students. It's a feature rather than a flaw. If students are better equipped with effective study habits and support, they can perform better on exams and manage their test anxiety." This may highlight Participant 1's response that even though the students are nervous, they can manage it. She concluded that if students have high test anxiety, then the best time to address that is before the test.

The participants employ various exam strategies: Participant 2 adopts a focused approach, concentrating on the material covered before the exam and emphasizing understanding and applying formulas. On the other hand, Participant 4 demonstrates confidence in their exam-taking abilities, particularly in open-note exams, relying on the availability of formulas to optimize performance and alleviate anxiety. These strategies highlight the importance of methodical preparation, comprehension, and resource utilization in achieving exam success.

The study by Dodeen (2015) defined test-taking strategies as cognitive abilities that allow individuals to navigate any testing situation effectively, regardless of their knowledge of the specific test content; examples include managing time wisely, surveying all the questions before responding, dealing with difficult questions, using practical approaches for multiple-choice questions, and identifying the keywords in the questions - these strategies are separate from the actual subject knowledge being assessed, but can enable a person to perform better on a test by utilizing specific thinking and problem-solving skills. His paper aims to first review and discuss the significant direct and indirect importance of teaching test-taking strategies. Directly, these strategies help students improve test scores by using time, effort, and test conditions more effectively. Indirectly, appropriate strategies can reduce anxiety and improve attitudes toward tests. Additionally, over 50 techniques have been introduced for systematically teaching these main test-taking strategies, particularly in question formatting, emphasizing the value of explicitly providing this instruction. He concluded that these

methods could be used at any school level and with any subject or set of resources. It's also essential to remember that Biber's (2022) study on students' self-regulated learning strategies for preparing for math lesson exams revealed that high achievers employed nearly all of these strategies, while low achievers only used a portion. The results showed that low achievers' self-regulated learning strategies included self-evaluation, getting support and information, controlling their surroundings, and reviewing notes before mathematics exams.

6. CONCLUSIONS

This study explored the junior high school students' mathematics experience, which is associated with mathematics anxiety and coping mechanisms when facing mathematics-related challenges. The findings revealed that the junior high school students recognized that challenges with the teaching and learning process are characterized by inconsistent teaching and variations in teaching quality, challenging mathematical concepts, and lack of confidence stemming from the belief that others are faster to comprehend mathematical concepts than them. Moreover, this is due to discrepancies between the simplicity of examples and the complexity of quiz content, the feeling of uncertainty and confusion, particularly with problem-solving questions, struggling with mental math and feeling stressed when solving problems with classmates. Other students experienced moments of distraction during class, affecting their comprehension, and are struggling to maintain focus despite a desire to learn. Students also recognize that they are having anxiety and academic pressure as characterized by their fear and anxiety about not being able to solve math problems in front of peers, feeling anxious when teachers ask questions during class, and holding back due to fear of making mistakes in front of others. Moreover, students have anxiety triggered by focusing on exams, concerns about thoroughness or accuracy of studying, leading to nervousness during the exam, worrying about incorrect solutions despite belief in the ability to manage the situation, nervousness due to the fear of forgetting formulas during the exam and concerns about exams when unsure about answers. However, despite these challenges, the students had diligent preparation before exams despite feeling nervous and confident in their ability to manage. It is also important to note that the students have external support from their peers, friends, family, and technology (YouTube videos, tutorials, and other online resources).

7. RECOMMENDATIONS

Based study's findings, the following recommendations are proposed for educators, policymakers, and educational institutions.

Efforts should be made to enhance the consistency and quality of teaching in mathematics. Providing professional development opportunities for teachers to improve their instructional practices and pedagogical skills can contribute to more effective teaching methods. Encouraging teachers to use various instructional strategies, such as visual aids, real-life examples, and interactive activities, can help students better comprehend mathematical concepts.

Creating a supportive and inclusive learning environment is crucial for addressing students' anxiety and academic pressure. Teachers and school administrators should promote a positive classroom atmosphere where mistakes are seen as opportunities for learning and students feel comfortable asking questions and seeking help. Activities encouraging collaboration and peer support can also alleviate anxiety and build students' confidence in their mathematics abilities. Recognizing and addressing students' emotional well-being is also essential. Educators should provide resources and strategies to help students manage mathematics anxiety and develop a growth mindset. Teaching students coping techniques such as deep breathing exercises, positive self-talk, and relaxation techniques can assist in reducing anxiety levels. Additionally, offering guidance and support to help students overcome perfectionism and fear of failure can contribute to a healthier approach to learning mathematics.

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4. Ethical Approval: Informed consent was obtained from all participating junior high school students, ensuring the confidentiality of their personal information and responses, guaranteeing voluntary participation with the right to withdraw at any time, and maintaining respect and sensitivity towards participants throughout the research process. All data collected was anonymized and securely stored to protect participants' identities, and participants were treated with dignity and honesty during interviews. The research was conducted in line with ethical guidelines and principles, emphasizing honesty, integrity, and respect for participants' rights and welfare.

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