

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students



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**ABSTRACT:** Algebra serves as a foundational pillar in Mathematics education. This study sought to explore students' levels of anxiety, difficulty, and performance in Algebra. It also determined the significant relationship between anxiety, difficulty and performance in Algebra of Grade 8 students, and identify which independent variable/s singly or in combination predicts the students' performance in Algebra. This study utilized a descriptive-correlational and causal design with documentary analysis. Survey was conducted at the selected public high schools within the Schools Division of Bukidnon, Municipality of Malitbog. The 108 student-respondents were selected using proportional random sampling through Slovin's Formula with 5% marginal error and 95% confidence level. The researcher used a self-made 5-point Likert scale questionnaire that was validated and pilot-tested. The data collected were analyzed and interpreted with descriptive statistical tools like Frequency and Percentage, Mean and Standard Deviation, Pearson Product-Moment Correlation Coefficient, and Multiple Linear Regression. Results revealed that students' levels of anxiety and difficulty were Very High but there was a moderate negative correlation between anxiety, difficulty and students' performance. Assessment anxiety, problem-solving skills, and application to real life were negative predictors of students' performance in Algebra. Thus, peer support systems, mindfulness, and fostering a positive classroom culture can be made to action to alleviate anxiety and difficulty have higher students' performance in Algebra.

**KEYWORDS:** Algebra performance, anxiety, difficulties, pupils

### I. INTRODUCTION

Algebra is a foundational pillar in Mathematics education, especially for Grade 8 students. Grade 8 marks the pivotal juncture where students encounter Algebra's abstract concepts and symbolic language for the first time. As eighth-grade students transition to the complexities of Algebra, ranging from variable manipulation and equation-solving to more abstract mathematical concepts, the emergence of anxiety and difficulties poses a substantial barrier to their successful comprehension, application, and performance outcomes. In the domain of education, anxiety is commonly experienced by learners, especially in K-12 and tertiary education. It exists when fear arises due to a stressful situation perceived as difficult or impossible. It may occur during class presentations or while solving a mathematical question.

According to Birenbaum and Pinku (1997), as cited by Hernandez et al. (2020), anxiety is "considered an alert and activation system for situations perceived as threatening." In particular, Algebra anxiety is characterized by emotional distress and apprehension when engaging with algebra concepts and evaluations, poses a formidable hurdle to effective teaching and learning and eventually to the academic achievement of learners. In fact, according to the study conducted by Sugiarti et al. (2019), students require support in addressing algebraic problems associated with concepts and principles. Students faced challenges linked to identifying variables and constants, encompassing issues such as understanding the definitions of variables and constants, as well as difficulties in applying the concept of division within algebra. It is a challenge that demands attention, for its implications extend far beyond the confines of the classroom.

Several studies have investigated the interplay between anxiety, difficulty, and academic performance. In algebra, for example, a meta-analysis conducted by Zhang et al. (2019) found a persistent inverse correlation between anxiety levels and student achievement. These vary depending on student nationality, grade level, and assessment type. It shows how, in the subject of Algebra, anxiety tends to lead to lower performance and vice versa. A similar study by Namkung et al. (2019) supports these

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

findings. It underscores the detrimental effects of Algebra anxiety on problem-solving abilities and performance. It highlights how this effect is not confined solely to academic performance, but extends to critical cognitive skills.

As per the 2018 PISA International Report, Filipino students aged 15 years old attained an average mathematical, specifically Algebra literacy, score of 353 points, significantly falling behind the Organization for Economic Cooperation and Development (OECD) benchmark of 489 points, which indicates performance below the Level 1 proficiency threshold (Bernardo et al., 2022). According to PISA Mathematics proficiency criteria, Level 1 proficiency means that students can answer questions situated in familiar situations but provided with the necessary information and well-defined questions. They demonstrate the capability to identify information and execute routine procedures following direct instructions in straightforward scenarios, actions that logically follow from the presented stimuli. This only means that very few 15-year-old Filipino students, fewer than 30%, operate at this mathematical proficiency level, and more than half of them are incapable of performing even basic mathematical tasks. The students need help solving the Algebra task for generalizing and equality (Wahyuni et al., 2020). This data point to the vital need for comprehensive research addressing algebra anxiety among students in the country.

This study sought to contribute to the local and existing literature by investigating the relationships between anxiety, difficulty, and performance in algebra among Grade 8 students. This study was essential in providing insights to administrators, teachers, and parents and contributing to developing interventions and support to enhance the academic performance of K–12 Grade 8 students.

The study was theoretically grounded in Beck's Schema Theory of Anxiety. According to this theory, negative automatic thoughts (NATs) exhibit the cognitive characteristics of schema activation in response to environmental stimuli. Beck's Schema Theory posits that NATs are central to understanding anxiety. These NATs function similarly to cognitive schemas, which are activated when individuals encounter stimuli that trigger anxiety. The activation of Negative Automatic Thoughts (NATs) can lead to a self-fulfilling prophecy, where students become increasingly anxious about their performance, thereby impairing their ability to engage with and understand mathematical concepts effectively. The mental characteristics associated with schema activation are evident in the content of anxious schemas, including underlying assumptions and beliefs, as well as the content of NATs (Beck, 1985). These anxious schemas may manifest in Mathematics anxiety, reflecting students' underlying beliefs about their mathematical abilities or perceptions of the subject's difficulty. When faced with math-related tasks, these schemas can become activated, leading to NATs specific to mathematics. This theory offers a framework for understanding anxiety and its occurrence within the context of learning mathematics.

The study proposed that psychological factors significantly impact academic performance, particularly in learning algebra. These assumptions are supported by Krashen's Affective Filter Hypothesis, which suggests that emotions such as motivation, self-esteem, and anxiety serve as filters that influence learning. In practical terms, low motivation or high levels of anxiety can act as barriers that impede students' ability to absorb information effectively. Conversely, when students are motivated and experience lower anxiety levels, their capacity to learn and perform well is enhanced. Therefore, the study aimed to explore how heightened anxiety, among other psychological factors, hinders the learning of algebra and affects academic performance.

## II. METHODOLOGY

The researcher employed a descriptive-correlational and causal design accompanied by documentary analysis to effectively address the posed research questions. Descriptive-correlational research is particularly adept at exploring associations between variables while refraining from asserting direct causation. (Creswell et al., 2020). Causal analysis aims to estimate the potential causal impacts by juxtaposing observed outcomes against counterfactual scenarios that would have occurred under alternate conditions (Morgan et al., 2019). Furthermore, documentary analysis involves a comprehensive approach to examining a variety of document types—textual, visual, or audio—to extract meaningful insights relevant to a specific subject or phenomenon. This method necessitates meticulous reading, contextual interpretation, and often comparative analysis to identify recurring patterns, biases, and implications (Abbott, 2021).

Descriptive methods were employed to measure the level of anxiety and difficulty in the first three research questions. Inferential statistics has been applied to analyze the collected data for the inferential questions. The correlational research design explored the relationship between anxiety level, difficulty level, and performance in Algebra among Grade 8 students. This analysis involved examining the relationship's strength and direction using appropriate statistical tests. If a significant relationship is found, the last research question would investigate which independent variables singly or in combination explain Academic Performance.

## III. RESULTS AND DISCUSSION

**Problem 1.** What is the students' level of anxiety in Algebra in terms of:

1.1 instruction apprehension

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

### 1.2 assessment anxiety

Table 1 on the next page, shows the students' Overall Level of Anxiety in Algebra in terms of Instruction Apprehension and Assessment Anxiety. It reveals that it has an overall Mean of 4.33 with SD = 0.74, indicating a Strongly Agree response, which is interpreted as Very High. This data imply that students' level of anxiety in Algebra is very high. This also imply that during instruction and assessments students are experiencing apprehensions, anxiousness, and fear which impacts their ability to perform during these activities. This could also mean that they are mentally disrupted which lessens their concentration as well as their ability to perform well while doing Algebra tasks. This supports the study by Maloney and Beilock (2020), examined the cognitive impacts of Mathematics anxiety on student performance in Algebra, highlighting how anxiety disrupts concentration and problem-solving ability, leading to decreased performance in high school settings.

**Table 1: Overall Anxiety in Algebra**

Construct	Mean	SD	Description	Interpretation
Instruction Apprehension	4.25	0.77	Strongly Agree	Very High
Assessment Anxiety	4.42	0.71	Strongly Agree	Very High
<b>Overall</b>	<b>4.33</b>	<b>0.74</b>	<b>Strongly Agree</b>	<b>Very High</b>

**Note:** 4.21-5.00 Very High    3.41-4.20 High    2.61-3.40 Moderate    1.81-2.60 Low    1.00-1.80 Very Low

Moreover, the variable, *Assessment Anxiety*, has the higher Mean of 4.42 with SD = 0.71, indicating a Strongly Agree response, which is interpreted as Very High. This means that students are more anxious and nervous during assessments. This could also mean that the significance of the assessment and it's meaning to their performance could intensify the emotions of fear, anxiousness, and uneasiness they feel during the activity. This could further imply that the concentration and ability of the students are highly influence by their emotions which decrease their ability to perform and function well during assessments. The study of Hembree (2020) suggested that students suffering from test anxiety are more likely to underperform in Algebra assessments. This highlights the important role of concentration and focus during assessment activities. Concentration during assessments helps students think clearly and make use of their ability well.

On the other hand, the variable, *Instruction Apprehension*, got the lower Mean of 4.25 with SD = 0.77, indicating a Strongly Agree response, which is interpreted as Very High. This implies that students' hesitation to ask questions or engage in class due to fear of negative feedback or evaluation is lesser in comparison to assessment anxiety. This could also mean that for students receiving instructions and communication during class is still very essential in understanding concepts and various process especially in Algebra. This could also mean that their determination to learn outweighs the apprehensions they feel during instructions. This could further mean that a positive classroom environment during learning is highly emphasized between teacher and students. This agrees with the study of Keller et al. (2022) which revealed that positive interactions with teachers can significantly reduce apprehension and improve students' learning experiences. Emphasis on positive interaction can improve students' ability to interact as well as perform well. Participation during instruction especially in Algebra helps clear misapprehensions during the learning process.

**Problem 2.** What is the students' level of difficulties in Algebra based on their:

- 2.1 conceptual understanding;
- 2.2 problem solving skills; and
- 2.3 application to real life?

**Table 2: Overall Difficulties in Algebra**

Construct	Mean	SD	Description	Interpretation
Conceptual Understanding	4.35	0.72	Strongly Agree	Very High
Problem-Solving Skills	4.43	0.71	Strongly Agree	Very High
Application in Real Life	4.16	0.78	Agree	High
<b>Overall</b>	<b>4.31</b>	<b>0.74</b>	<b>Strongly Agree</b>	<b>Very High</b>

**Note:** 4.21-5.00 Very High    3.41-4.20 High    2.61-3.40 Moderate    1.81-2.60 Low    1.00-1.80 Very Low

Table 2 shows the students' overall level of difficulties in Algebra. It reveals an overall Mean of 4.31 with SD = 0.74, indicating a Strongly Agree response, which is interpreted as Very High. This indicates that students faced difficulty in grasping

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

abstract concepts in Algebra. This could also mean that students' abilities related to Algebra will be greatly affected because of these difficulties. This could also indicate that a person's academic and professional success will be affected because of their inability to understand the concept of algebra in life. Mastery of algebraic skills not only benefits students academically but also empower them to navigate the complexities of the real world with greater confidence and success. The study of Veith et al. (2023) suggest that Algebra education is critical for understanding higher-level mathematics. Students lack of a solid understanding of algebra can lead to difficulties in understanding higher-level Mathematics courses, which can limit students' academic and career opportunities.

Understanding advanced Mathematics concepts and its significance in different fields such as technology, engineering, and Mathematics lies in the strong foundation of understanding Algebra making it an important part of education. However, students face difficulties in understanding algebra. The difficulties they experience include understanding the problem, the meaning of variables, and operating the algebraic form. This can impact their ability to pursue careers in fields that require advanced mathematical skills. In support, the study of Pramesti et al. (2019) also found the same implications faced by the students.

Moreover, the variable, *Problem-Solving Skills*, has the overall highest Mean of 4.43 with SD = 0.71, indicating a Strongly Agree response, which is interpreted as Very High. Having challenges in solving Algebra can indicate that the individual lacks the skills to solve the problem and may need further development of problem-solving skills rather than just learning formulas. This could mean that students may misinterpret the problem or overlook essential details, leading to errors in judgement and decision-making. This could further mean that the lack of students' proficiency can hinder their ability to engage with a problem effectively, making it challenging to navigate through the necessary steps to reach a solution.

In the study of Cadorna et al. (2021), students faced challenges when the problem required them to evaluate because they lacked the skills to assess the problem. This underscores the difficulties students encounter in evaluating problems, which is a critical aspect of effective problem-solving. Students when faced with a problem, they may struggle to assess its elements accurately due to inadequate problem-solving skills. These skills include the ability to analyze the problem, identify relevant information, and determine appropriate strategies for finding a solution. Furthermore, without a strong foundation in these areas, students' overall confidence and motivation to tackle new challenges may diminish thus, resulting in a cycle of underperformance in Algebra.

On the other hand, the variable, *Application in Real Life*, got the overall lowest Mean of 4.16 with SD = 0.78, indicating an Agree response, which is interpreted as High. Although application in real life has the lowest mean among the different difficulties they experience, it can still significantly affect their understanding of the significance of Algebra in their lives. This can still signify an existing struggle of students about failing to see the connection between the concepts learned in Algebra and its everyday application to real life. Understanding the underlying algebraic concepts in everyday scenarios helps students become more flexible, effective-problem-solvers, capable of tackling a wide range of challenges. Algebra can be applied in different activities, not only in the field of education but also in practical applications in life. It is not just an abstract Science but a practical tool for solving real-world problems (Ivy, 2020).

**Problem 3.** What is the students' level of performance in Algebra?

**Table 3: Students' Performance in Algebra**

Range	Frequency	Mean	SD	Description	Interpretation
90 and above	9				
85-89	20				
80-84	34	82.45	5.22	Satisfactory	Moderately High
75-79	39				
74 and below	6				
<b>Total</b>	<b>108</b>				

**Note:** 90%-100% Very High 85%-89% High 80%-84% Moderately High 75%-79% Low 74% and below Very Low

Table 3 shows the students' performance in Algebra. It reveals that grades ranges 75-79 has the most number of respondents which is 39 or 36.11% out of 108 respondents got Fairly Satisfactory, interpreted as Low, followed by grades ranges 80-84 which is 34 or 31.48% of the respondents got Satisfactory grade interpreted as Moderately High and 20 or 18.52% of the respondents got Very Satisfactory interpreted as High with grades ranges 85-89. In addition, only 9 or 8.33% got an Outstanding grade, interpreted as Very High with grades ranges 90 and above and 6 or 5.56% who did not meet expectation interpreted as Very Low with grade ranges 74 and below.

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

In addition, the same table revealed a mean of 82.45 and SD=5.22, indicating a Satisfactory response, which is interpreted as Moderately High. The data implies that the majority of the students' performance grade in Algebra is at the third highest level of performance only. This also suggest that a significant portion of students struggle with fundamental mathematical and algebraic skills. This could also signify that students lack mastery of Algebra concepts and skills required of their level. When students struggle with these fundamental skills, it often points to a lack of mastery in essential algebra concepts that are crucial for advancing in mathematics at their current educational level. Without a strong grasp of these foundational skills, students may find it increasingly difficult to progress to more complex algebra topics, creating a gap in their understanding and compounding their challenges as they advance in their studies.

The study of Pramesti et al. (2019) suggests that students' difficulties in learning algebra are attributed to their lack of background knowledge, inadequate teaching methods, and the overall complexity of algebra as a subject. This agrees with the study by Yao et al. (2021), researchers found that many students lack the necessary skills to perform algebraic operations accurately. In particular, their research indicated that difficulties with manipulating expressions and solving equations are prevalent among middle school students. The findings suggest that developing procedural fluency through practice and effective teaching strategies is essential for improving students' overall algebra performance.

**Problem 4.** Is there a significant relationship between anxiety and performance in Algebra of the grade 8 students?

The table 4 shows Pearson's correlation test between the Anxiety and performance in Algebra. For assessment anxiety, it registered a computed  $r$ - value of -0.65 with computed  $p$ -value of 0.000. the computed  $p$ -value is less than 0.05 level of significance. The test shows a moderate negative correlation between the dependent variable and the two independent variables which are the instruction apprehension and assessment anxiety which indicate high correlation. If the correlated independent variables change its direction the students' performance in algebra will also change in an opposite direction.

**Table 4: Pearson's Correlation Test between the Anxiety and Performance in Algebra**

Independent Variables	r-value	p-value	Description	Interpretation
Instruction Apprehension	-0.59	0.000	MNC	Significant
Assessment Anxiety	-0.65	0.000	MNC	Significant

**Note:** Significant when computed  $p$ -value <0.05      MNC = Moderate Negative Correlation  
WNC = Weak Negative Correlation

In addition, table 9 took the analysis at the independent variable level by looking at the correlation test while keeping the dependent variable constant during each assessment. As can be seen from the same table, the two independent variables are significant at 0.05. In summary, taking it at the coefficient level, these anxieties are negatively correlated to the students' performance in Algebra, with a  $p$  value less than 0.05. Thus, the correlation analysis yielded that the null hypothesis test ( $H_0$ ) was rejected. With the following findings, moderate negative correlation.

The results provide evidence of a moderate negative correlation between Mathematics anxiety and mathematical performance in Algebra. This indicates that there is an association between higher levels of Mathematics anxiety and lower mathematical outcomes. Furthermore, implying from these results, the findings also suggest that the strength of the relationship is not extremely strong, suggesting that not all students with high Mathematics anxiety perform poorly in Mathematics. However, the tendency is evident: those who experience higher levels of anxiety when dealing with mathematical problems are likely to perform less effectively. This negative association indicates that heightened feelings of anxiety can adversely affect students' ability to understand, engage, and succeed in algebraic concepts and problem-solving.

This agrees with the study of Kariuki et al. (2021) that revealed that students who report higher level of Mathematics anxiety often demonstrate reduced participation in mathematical tasks, further contributing to lower achievement. When students feel anxious about their Mathematical skills, they might experience stress that distracts them from focusing on the task at hand which impair their cognitive abilities, leading to lower performance in Algebra.

**Problem 5.** Is there a significant relationship between difficulties and performance in Algebra of the grade 8 students?

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

**Table 5: Pearson's Correlation Test between the level of the Difficulties and Performance in Algebra.**

Independent Variables	Dependent Variable	r-value	p-value	Description	Interpretation
Conceptual Understanding	Students' Performance in Algebra	-0.53	0.000	MNC	Significant
Problem-Solving Skills	Algebra	-0.57	0.000	MNC	Significant
Application in Real Life		-0.26	0.000	WNC	Significant

**Note:** Significant when computed p-value <0.05  
MNC = Moderate Negative Correlation  
WNC = Weak Negative Correlation

The table 5 shows Pearson's correlation test between the difficulties and performance in Algebra. For problem-solving skills, it registered a computed r-value of -0.57 with computed p-value of 0.000. The computed p-value is less than 0.05 level of significance. The test shows a moderate negative correlation between the dependent and the two independent variables in difficulties in algebra which are the conceptual understanding and problem-solving skills. While weak negative correlation between application in real life and performance in algebra. If the correlated independent variables change its direction the students' performance in Algebra will also change in an opposite direction.

In addition, table 10 took the analysis at the independent variable level by looking at the correlation test while keeping the dependent variable constant during each assessment. As can be seen from the same table, all three independent variables are significant at 0.05. In summary, taking it at the coefficient level, these difficulties are negatively correlated to the students' performance in Algebra, with a p value less than 0.05. Thus, the correlation analysis yielded that the null hypothesis test ( $H_0$ ) is rejected. With the following findings, moderate and weak negative correlation.

The results provide evidence of a moderate negative correlation and a weak negative correlation between difficulty in Algebra and mathematical performance in Algebra. This indicates that there is an association between higher levels of difficulty in algebra and lower mathematical outcomes. Furthermore, implying from these results, indicates that students who struggle to grasp the conceptual underpinnings and master the symbolic manipulation required in algebra may also demonstrate lower levels of proficiency across various measures of their overall mathematical performance in this domain. This association indicates that when students find Algebra particularly difficult, they may experience frustration and a lack of motivation, leading to poorer performance on Algebra tasks.

The study of O'Connor and Geiger (2021) found that students who perceived Algebra as difficult were less likely to apply effective problem-solving strategies, resulting in decreased performance. This perception of difficulty can create a mental block, leading to feelings of frustration and discouragement. Consequently, instead of engaging with the material and applying various problem-solving techniques, these students may resort to avoidance behaviors, choose simpler tasks, or give up entirely when faced with algebraic problems. This negative mindset can perpetuate a cycle of poor performance, as they miss opportunities to practice their skills and build a deeper understanding of algebraic concepts.

**Problem 6.** Which of the Independent variable/s singly or in combination predict/s' the dependent variable?

**Table 6: Regression Analysis between Students' Level of Anxiety, Difficulties, and Performance in Algebra**

Variables	UC		SC		t-value	Sig. (p-value)	Decision
	B	SE	$\beta$				
Constant (Performance in Algebra)	10.268	0.785	11.825		13.081	0.000	
Instruction Apprehension	-0.351	0.248	0.142		-1.413	0.161	Accept Ho3
Assessment Anxiety	-0.928	0.259	-0.413		-3.577	0.001	Reject Ho3
Conceptual understanding	-0.058	0.265	0.467		-0.219	0.827	Accept Ho3
Problem-Solving Skills	-0.805	0.284	-0.242		-2.838	0.005	Reject Ho3
Application in Real Life	0.486	0.176	0.836		2.76	0.007	Reject Ho3
<b>Model</b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>Adjusted R<sup>2</sup></b>		<b>f-value</b>	<b>Sig. (p-value)</b>	<b>Decision</b>
	0.709	0.503	0.479		20.65	0.000	Reject Ho3

**Note:** R = Multiple R      R<sup>2</sup> = R Square      p-value = Significant level p<0.05      UC = Unstandardized Coefficients  
SC = Standard Coefficients      B = Coefficients      SE = Standard Error       $\beta$  = Beta Coefficients  
t-value = test Statistics      f-value = Variance of the sample means

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

The table 6 presents regression analysis with moderating variables that predict the students' performance in Algebra. It is hypothesized that the five (5) predictors will be positively or negatively associated with performance in Algebra where  $\beta = 0$  as null and the alternative of  $\beta \neq 0$ . That explains whether the independent variables are good predictors of the students' performance in Algebra. In addition,  $F(5,108) = 20.65$ ,  $p < .001$ . Moreover, Assessment Anxiety ( $\beta = -0.413$ ,  $t$ -value =  $-3.577$ ,  $p$ -value =  $0.001$ ), Problem-Solving Skills ( $\beta = -0.242$ ,  $t$ -value =  $-2.838$ ,  $p$ -value =  $0.005$ ), and Application in Real life ( $\beta = 0.836$ ,  $t$ -value =  $2.76$ ,  $p$ -value =  $0.007$ ) are negatively has a relationship with the students' performance in Algebra. It can be concluded that if the students' difficulties in Algebra in terms of application in real life change by 1% the performance in algebra also increase by 20.65%.

Taking it in the coefficient level, anxiety in Algebra in terms of assessment anxiety and difficulties in Algebra in terms of problem-solving skills and application in real life are predictor of students' performance in Algebra with a  $p$  value lesser than 0.05. Hence, the regression analysis yielded that the null hypothesis test ( $H_0$ ) was rejected. With the following findings, a negative linear relationship exists between the variables. On the other hand, instruction apprehension and conceptual understanding are not predictors of student' performance in Algebra in the context of Algebra anxiety and difficulty.

Moreover, implementing intervention programs and instructional strategies to reduce assessment anxiety can greatly improve the students' academic performance in Algebra, as the two variables are considered factors affecting their performance. Study of Petronzi et al. (2021) described Mathematics anxiety and reviewed different interventions to address Mathematics anxiety. Math anxiety is the adverse cognitive-emotional reaction to Mathematics related to the feeling of anxiousness that prevents a person from solving mathematical problems. A person with Math anxiety shows poor performance in Mathematics class. It is suggested that educators should target cognitive and emotional mechanism, unfavorable appraisal and self-image, self-regulation and metacognitive skills, along with insufficient Mathematics proficiency to improve the Math performance of students. The intervention proven to be the most effective at reducing Math anxiety is cognitive-behavioral intervention, and to improve Math anxiety symptoms, increase Math performance, and decrease observed amygdala reactivity, the study suggested using one-on-one tutoring.

Improving problem-solving skills and application to real life can greatly enhance the quality of a student's performance, while conceptual understanding life has no significant effect on this matter. However, as seen in the results, its either algebraic concepts don't seem to relate to real-life problems or assessment tools used to measure Algebra performance doesn't validly represent real-life scenarios. The findings of this study can be used to develop instructions for teachers to use for the betterment of students' education. Context-based learning is suggested to enhance conceptual understanding as it cultivates the ability of a student to analyze problem which then help them to develop problem solving skills (Fayzullina et al., 2023). Integration of real-life context into the curriculum not only aids comprehension but also enhances students' engagement with the subject matter.

## IV. CONCLUSIONS

Based on the aforementioned findings, the following conclusions were made from the study:

1. Grade 8 students face significant anxiety in Algebra during assessments.
2. Grade 8 students face significant difficulty in Algebra during problem solving.
3. There is a likelihood that academic performance in the subject is not good and learning of essential competencies are potentially being compromised.
4. The moderate strength of the negative correlations of both anxiety on performance in Algebra shows the degree to which these variables are interrelated. The higher these anxieties are, the lower the performance will be.
5. The moderate strength of the negative correlations of difficulties on performance in Algebra shows the degree to which these variables are interrelated. The higher these difficulties are, the lower the performance will be.
6. Based on regression analysis, the identified predictors of students' performance in Algebra indicate that assessment anxiety, problem solving skills, and application to real life significantly affect students' performance in Algebra.

## V. RECOMMENDATIONS

In light of the above findings and conclusions, the following recommendations are presented:

1. School Administrators and teachers may use the results' findings and conclusions on anxiety and difficulty to outline effective approaches that can help create a supportive and understanding atmosphere conducive to learning. It could be targeted interventions to alleviate anxiety and difficulty in Algebra classes for students in Grade 8, such as peer support systems, mindfulness, and fostering a positive classroom culture. School administrators could also organize workshops focusing on how parents' can help alleviate their children's anxiety at home by providing informational materials on effective communication strategies and managing expectations which could empower parents to foster a supportive environment for their students.

## Anxiety, Difficulties, and Performance in Algebra of Grade 8 Students

2. Teachers can implement specific strategies for reducing assessment anxiety and problem-solving difficulty to decrease attitude-based fears to assessment, and problem-solving difficulty in the classroom, such as teaching test-taking strategies, regular formative assessment (verbal or in writing), providing constructive feedback on every response. Developing structured review sessions or groups facilitated by teachers or establishing mentorship program where older students helps younger ones navigate assessment related anxieties and problem-solving difficulties. This helps build up confidence and helps alleviate anxiety and difficulty.

3. Schools as institutions can consider faculty professional development on effective instructional strategies, gradual release models, psychological counselling, and other techniques to shift the focus from assessment anxiety and problem-solving difficulty inducing factors to support students' sociocultural environment.

4. Parents may benefit from insights into how they can support their children if assessment anxiety and problem-solving difficulty related challenges are present. Guidance, open discussion, assurance and compromise with educators can be effective practices to support their child's stress and academic achievement.

5. Students can learn a range of methods to address Algebra anxiety and difficulty, which will differ from the cases discussed but may feature exposure and direct concrete performance, self-guided group projects or use of a positive behavior intervention.

6. Future researchers will also benefit, as this study may be used as a preliminary investigation of the question, explore other factors contributing to students' fear and anxiety.

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