| RESEARCH ARTICLE

Impact of Academic Stress on The Performance of The Grade 9 Students in Mathematics

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| ABSTRACT

One of the most frequent stressors that students encounter is academic stress. The purpose of this study was to determine whether there is a significant relationship between the academic performance of grade 9 students at Campagao High School in Campagao, Bilar, Bohol, and their level of academic stress. The study employed the descriptive-correlational survey research design and the complete enumeration technique was used to obtain 63 respondents. The survey instrument was based on a standardized questionnaire and the data gathered were analyzed using the Pearson Product Moment Coefficient of Correlation at 0.05 alpha level. The major finding of the study indicated that there is a significant relationship between the level of academic stress and the level of mathematics performance. Furthermore, it was revealed that most of the respondents were 14 years old and were female. Majority of the respondents' female parents were high school level while the highest educational attainment of the male parents was either high school level or elementary level with a combined family monthly income of P10 000 and below. Moreover, the level of academic stress experienced by the respondents in learning mathematics was moderate while the level of the students' academic performance in math was developing. In line with the findings and conclusion of the study, the researcher recommends that the proposed math performance enhancement plan can be used and monitored.

Introduction

High school education is a crucial stage in life where individuals undergo meaningful experiences that contribute to their personal growth and help them discover their true identity (Branjie et al., 2021). During this period, students take on various roles and responsibilities as they prepare for the next chapter of their lives, which often results in significant stress. Manosso et al. (2022) emphasized that stress, in turn, is a complex condition that gradually contributes to chronic illnesses and mental health disorders, while simultaneously reducing productivity, diminishing quality of life, and escalating healthcare costs. Students encounter different sources of stress and one of the most common is the academic stress. Though, different levels of learning and living conditions are encountered in different student's stress problems (Van, et al., 2019), academic stress remains a shared challenge among many learners.

In relation to this, academic stress is often overlooked by some parents and teachers; however, it significantly affects the learner's emotional and physical well-being and can ultimately lead to depression. This concern is supported by a 2015 survey conducted by the Organization for Economic Cooperation and Development (OECD), which involved 540,000 students across 72 participating countries and revealed that many students experience high levels of anxiety related to schoolwork and tests. When such anxiety arises, stress becomes inevitable, as students strive to attain high scores while simultaneously managing their time between studying, completing homework, and fulfilling other tasks assigned by the teachers. Moreover, academic and family stress have been confirmed to lead to depressive symptoms among students, which in turn negatively impact their learning outcomes and academic performance (Deng et al., 2022). Additionally, the frequency of testing is linked to elevated

anxiety: across OECD countries, 59% of students reported worrying about test difficulty, 66% worried about poor grades, and 55% felt anxious even when well prepared (Becker, 2025).

Similarly, in the Philippines, students face academic stress due to the demanding school structure, where they are required to take eight subjects each day. Consequently, each subject teacher expects students to accomplish various requirements, which puts additional pressure on them. As a result, learners often feel overwhelmed and stressed, frequently struggling to manage the limited time available to complete all assigned tasks. Among these subjects, Mathematics stands out as one of the most challenging general education disciplines taught in both basic and higher education. Students are expected to understand and appreciate its principles as applied through appropriate technology in problem-solving, critical thinking, communicating, reasoning, making connections, and making decisions in real-life situations. Correspondingly, in the Philippine education system, mathematics is one of the top priorities in terms of the number of hours allocated per class across all levels. The Department of Education (DepEd) mandated a 50-minute time allocation every day based on the old curriculum (Revised Basic Education Curriculum) and 1 hour for 4 days as mandated in the new curriculum (K to 12 Curriculum). Mathematics is also one of the subjects included in assessing one's achievement in terms of national-level competency, such as the National Career Assessment Examination and the National Achievement Test.

Despite many efforts to improve students' skills in mathematics such as the Mathematics Teachers Association of the Philippines (MTAP) trainings, the Mathematics Trainers' Guild, and other enrichment and remedial programs offered by public and private schools students in the Philippines still perform poorly in math. According to the PISA 2022 report by the OECD, almost no Filipino students were top performers in mathematics, highlighting ongoing challenges despite all these initiatives. Teachers have also observed that many students experience stress from handling multiple subjects and academic responsibilities. In addition to schoolwork, students also face peer pressure and the need to fit in, which can affect their sense of identity. For Grade 9 students especially, this stage is even more challenging. They often struggle with emotional regulation, experiencing stronger emotions, stress, and anxiety due to school demands and social expectations. Learning how to manage these emotions is very important for their mental well-being. Moreover, Grade 9 comes with tougher academic standards than earlier levels. Students are expected to be more independent and responsible, which can be overwhelming for some. The combination of academic pressure, emotional changes, and social influences makes Grade 9 a particularly difficult year for many learners.

Hence, the researcher is interested to find the impact of academic stress on the performance of grade nine students in mathematics in Campagao High School. The output of this study which is the proposed math performance enhancement plan will be beneficial to the stakeholders which include the department of education, school principal, teachers, students, parents and of course the researchers. It will serve as a guide in crafting a curriculum in mathematics that eliminates or lessen the academic stress experienced by the learners for the improvement of their mathematics performance. Furthermore, the majority of research on academic stress focuses on college or undergraduate students, especially those pursuing nursing degrees. Few studies concentrate on high school students. Furthermore, only a small number of studies have addressed the local context; the majority of the research to date has been done outside of the Philippines. This emphasizes the need for more level-specific and localized research, which supports the importance of the current study even more.

Related Literature

The transition from one grade level to another, especially in adolescence, can be a stressful time for students. They are expected to handle more schoolwork while also going through emotional and social changes. Research shows that students who struggle to manage stress from school and peer relationships may also experience drops in academic performance and emotional well-being (Erath et al., 2016). One of the key skills students' needs during this time is emotional regulation. When students learn how to manage their emotions properly, they are better able to cope with academic pressure and peer stress (Karamina & Martani, 2023). On the other hand, students who bottle up or hide their emotions may be more affected by peer pressure and school challenges.

A supportive school environment can also play a big role in reducing academic stress. Studies show that a positive school climate where students feel safe, supported, and treated fairly helps lower anxiety and stress levels while improving their ability to learn (Pramesti & Hernawati, 2024). Strong social and emotional skills are also linked to greater belief in academic abilities and lower levels of emotional distress (Vestad, 2022). In addition, when students have healthy peer relationships, they are more motivated and open to seeking help when needed, which leads to better outcomes in school (Nguyen-Thi et al., 2024). These findings show how important it is to support students emotionally and socially during this critical stage in their education.

Methodology

This study used a descriptive-correlational design to explore the link between academic stress and the math performance of Grade 9 students. It aimed to describe how these two factors naturally occur and connect with each other. The study followed the Input-Process-Output (IPO) model to show the research flow. It was done at Campagao High School in Campagao. The total

number of students was calculated using Slovin's Formula, and simple random sampling was used to ensure everyone had an equal chance to be selected. Data was gathered through the Academic Stress Scale (ASS) created by Kohn and Frazer (1986), which had 15 questions rated from 1 (not stressful) to 5 (extremely stressful). The survey also collected personal details like age, gender, parents' education, and monthly income. Students' grades in math for the first quarter were used to measure their academic performance, grouped from "Beginning" (74 and below) to "Advanced" (90–100). The Likert Scale of Summated Ratings helped give each response a number and calculate the weighted average, showing the students' overall

stress levels. To find the connection between academic stress and math performance, Pearson's r was used. This is a tool that checks how strong and in what direction two factors are linked. This method helped the researchers clearly see how academic stress may affect students' performance in math.

Table 1. Age and Gender of the Respondents

Age (in years)	Female		Male		Total	
	f	%	f	%	f	%
15	5	7.94	5	7.94	10	15.87
14	27	42.86	25	39.68	52	82.54
13	0	0.00	0	0.00	0	0.00
12	0	0.00	1	1.59	1	1.59
Total	32	50.79	31	49.21	63	100.00

Results

Table 1 shows the distribution of respondents by age and gender. The majority of the students were 14 years old, making up 82.54% of the total population, with 27 females and 25 males. Both 15-year-old females and males each made up 7.94% of the sample, totaling 15.87%. Only one student, a 12-year-old male, was recorded, accounting for 1.59% of the group. There were no respondents aged 13. In total, there were 63 students: 32 females (50.79%) and 31 males (49.21%), showing a nearly even gender distribution.

Table 2. Parents' Highest Educational Attainment

Educational Attainment	Mother		Father	
	F	%	f	%
Master's Graduate	2	3.17	1	1.59
With Master's Units	0	0.00	1	1.59
College Graduate	5	7.94	5	7.94
College Level	4	6.35	5	7.94
High School Graduate	13	20.63	11	17.46
High School Level	19	30.16	16	25.40
Elementary Graduate	4	6.35	5	7.94
Elementary Level	16	25.40	16	25.40
No Formal Schooling	0	0.00	3	4.76
Total	63	100.00	63	100.00

Table 2 presents the highest educational attainment of the respondents' parents. For mothers, the most common level was high school level at 30.16%, followed by elementary level at 25.40%. High school graduates made up 20.63%, while only 3.17% were master's degree holders. A smaller number of mothers had completed college (7.94%) or only reached college level (6.35%). Very few had completed elementary (6.35%), and none had no formal schooling. For fathers, the most common educational attainments were also elementary level and high school level, both at 25.40%. This was followed by high school graduates at 17.46% and college graduates at 7.94%. A small portion had only completed elementary (7.94%) or reached college level (7.94%). Only one father held a master's degree (1.59%) and another had taken master's units (1.59%). Notably,

Table 3. Combined Family Monthly Income

Monthly Income (in pesos)	f	%
Above 30,000	2	3.17
25,001-30,000	2	3.17
20,001-25,000	8	12.70
15,001-20,000	5	7.94
10,001-15,000	11	17.46
10,000 and below	35	55.56
Total	63	100.00

4.76% of fathers had no formal schooling.

Table 3 shows the combined monthly income of the respondents' families. The majority of families, 55.56%, earn ₱10,000 or below per month, indicating that most students come from low-income households. Another 17.46% of families earn between ₱10,001 and ₱15,000, while 12.70% earn ₱20,001 to ₱25,000. A smaller portion of families fall within the ₱15,001–₱20,000 income bracket (7.94%). Only a few families have relatively higher incomes, with 3.17% earning ₱25,001–₱30,000, and another 3.17% earning above ₱30,000. These figures highlight that a significant number of students come from economically challenged backgrounds.

Table 4. Level of academic stress experienced by the respondents in learning Mathematics

S/N	Indicators	WM	Verbal Description
1	Understanding complex mathematical concepts	2.86	Moderate
2	Completing mathematics homework	2.83	Moderate
3	Preparing for mathematics tests and exams	3.05	Moderate
4	Participating in mathematics class discussions	2.70	Moderate
5	Working on mathematics group projects	2.95	Moderate
6	Achieving high grades in mathematics	2.89	Moderate
7	Keeping up with the pace of mathematics lessons	2.78	Moderate
8	Managing time effectively for mathematics study	2.95	Moderate
9	Balancing mathematics study with other subjects	3.13	Moderate
10	Coping with the fear of failure in mathematics	2.71	Moderate
11	Navigating the use of mathematics technology	2.98	Moderate
12	Adapting to different teaching styles in mathematics	3.06	Moderate
13	Engaging in mathematics extracurricular activities	3.05	Moderate
14	Handling peer pressure in mathematics performance	2.87	Moderate
15	Understanding the feedback from mathematics teachers	2.62	Moderate
	Aggregate Weighted Mean	**3.02**	2.90 Moderate

Table 4 shows that the respondents generally experience a moderate level of academic stress in learning mathematics, with an aggregate weighted mean of 2.90. All 15 indicators were rated as moderate, which means students are experiencing noticeable stress in various aspects of math, though it is still manageable. The highest stress levels were found in balancing math with other subjects (3.13), adapting to different teaching styles (3.06), and preparing for math tests and exams (3.05). Other areas where students reported moderate stress include managing time for math study (2.95), working on group projects (2.95), and navigating the use of math technology (2.98). The lowest stress level, although still moderate, was in understanding feedback from teachers (2.62). These findings suggest that while no area reached a high stress level, students consistently face moderate pressure across various tasks in learning mathematics

Table 5. Level of Academic Performance of the Respondents in Math

Level	Numerical Range	f	%
Advanced	90-100	4	6.35
Proficient	85-89	10	15.87
Approaching Proficiency	80-84	17	26.98
Developing	75-79	26	41.27
Beginning	74 and below	6	9.52
Total		63	100.00
Mean		80.13	
St. Dev.		5.21	

Table 5 presents the academic performance levels of the 63 Grade 9 respondents in mathematics. The majority of students (41.27%) were at the "Developing" level (scores between 75–79), indicating they have basic understanding but still need support. This is followed by 26.98% of students who were "Approaching Proficiency" (80–84), and 15.87% who were "Proficient" (85–89), showing a more solid grasp of math concepts. Only 6.35% reached the "Advanced" level (90–100), while 9.52% were in the "Beginning" category (below 75), suggesting struggles in the subject. The mean score was 80.13 with a standard deviation of 5.21, showing that most students performed around an average level. Overall, the data indicates that while some students are doing well, a large portion still require improvement and academic support in math.

Table 6. Test of significant relationship between the academic stress experienced by the respondents and their academic performance in Mathematics

Variables	r-value	Strength of Correlation	p - value	Decision	Result
Academic Stress and Performance in Math	-0.314*	Weak Negative	0.012	Reject Ho	Significant

*significant at p<0.05 (two-tailed)

Table 6 shows the statistical result of the relationship between academic stress and students' performance in mathematics. The computed r-value is -0.314, which indicates a weak negative correlation. This means that as academic stress increases, students' math performance tends to slightly decrease. The p-value is 0.012, which is less than the significance level of 0.05, leading to the decision to reject the null hypothesis (Ho). Therefore, the result is considered statistically significant, suggesting that there is a meaningful relationship between the level of academic stress experienced by the students and their performance in math. In short, higher academic stress is linked to lower performance in mathematics among Grade 9 students.

Discussion

Based on the findings, the study revealed that Grade 9 students experience a moderate level of academic stress in learning mathematics. Among the main stressors were balancing math with other subjects, adapting to different teaching styles, and preparing for exams. These consistent stress points suggest that students are under pressure not only from the content of mathematics itself but also from the surrounding academic environment. Although none of the stress indicators reached a "high" level, the cumulative effect of moderate stress in many areas may still negatively impact students' academic experience and mental well-being. These findings support previous studies, such as Pascoe, Hetrick, and Parker (2020), which emphasized how academic stress can affect cognitive functions like concentration and memory, potentially reducing academic performance. Moreover, the study established a significant but weak negative correlation between academic stress and students' mathematics performance. This means that as stress levels rise, performance in mathematics tends to slightly decrease. This aligns with findings by Barroso et al. (2021) and Jamieson et al. (2021), who reported that math-related anxiety and stress are common among students and often correlate with lower academic achievement. It suggests the need for schools to create interventions focused on stress reduction, such as peer tutoring, emotional regulation strategies, and flexible teaching methods, to help students better manage academic pressure and enhance performance in math.

Conclusion

This study concludes that students generally experience a moderate level of academic stress in mathematics, particularly in areas such as balancing the subject with other coursework, adapting to teaching styles, and preparing for exams. While these stress levels are not extreme, they are consistent across different tasks, which may gradually affect students' focus and learning. The results also showed a significant weak negative relationship between academic stress and math performance, indicating that higher stress tends to slightly lower students' achievement in the subject. This suggests that while stress is a natural part of learning, excessive or unmanaged academic stress can hinder students' potential. Therefore, schools, teachers, and parents should provide support systems such as stress-management strategies, peer mentoring, and flexible teaching methods to help students cope better. Reducing unnecessary academic pressure and promoting a supportive learning environment, students may perform better and develop a healthier attitude toward mathematics.

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