



PERCEIVED PROBLEMS AFFECTING ACADEMIC PERFORMANCE IN LEARNING MATHEMATICS AMONG THE GRADE 11 STUDENTS

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Abstract:

This research assessed the factors and problems affecting the mathematics achievement of the Grade 11 students at the two public high schools in the City of Naga, Cebu, Philippines, during the school year 2024-2025 using a descriptive-correlational research design. There were 104 randomly selected students who participated in the study and were asked to answer the survey questionnaires measuring the factors affecting their mathematics achievement and the problems that hinder their mathematics learning while their mathematics achievement was measured using a 40-item achievement test. Data were analyzed using frequency count, percentage, weighted mean, standard deviation, and Pearson's r . Results indicated that the respondents were moderately affected by the student-related, home-related, and teacher-related factors. They also sometimes experienced problems such as emotional difficulties, school adjustment issues, and overextended schedules/workloads, which hindered their mathematical understanding. Most of the respondents had satisfactory mathematics achievement. Moreover, the study found a significant relationship between the identified factors and the respondents' mathematics achievement. Similarly, the experienced problems were also significantly related to their mathematics achievement. The research concludes that these prevalent factors and problems directly influence the respondents' academic achievement in mathematics. Thus, the study recommends the immediate utilization of the strategic intervention plan developed from these findings.

Keywords: factors, problems encountered, mathematics achievement, Grade 11 students

1. Introduction

Mathematics is one of the core subjects in the Philippine educational system. It is a 'use it or lose it' subject, which can significantly influence a student's academic performance—

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either positively or negatively. However, according to Lapinid *et al.* (2022), the Philippines has consistently performed poorly in international mathematics large-scale assessments. According to San Juan (2019) from the Philippine Star, the results of the 2018 Program for International Student Assessment (PISA) revealed that the Philippines ranked second to the last in Mathematics, with a country mean score of 353 among 79 participating countries. This outgrowth suggests that several factors may be impacting students' academic performance in learning mathematics and in transnational assessments.

A study conducted in Dubai describes learning as a process through which individuals acquire new knowledge and skills, resulting in observable changes in behavior. Learning mathematics, in particular, is a complex and evolving process that demands both preparation and mental readiness. Many students view mathematics as a challenging and demanding subject, often associated with feelings of fear and anxiety. Attitudes toward mathematics, along with other psychological factors, play a crucial role in shaping students' academic performance. According to Moussa and Saali (2020), the level of math courses significantly influences students' attitudes across six dimensions: interest in the subject, perceived importance of mathematics, career aspirations related to math, perceptions of the instructor, difficulty level, and availability of resources. The study found a clear relationship between course level and students' overall disposition toward learning mathematics.

Mathematics is frequently regarded as a grueling subject, and it's generally accepted by many that being good at calculation is not for everyone (Peteros *et al.*, 2029). As a result of this mindset, students constantly abandon mathematics as soon as it's no longer an obligatory part of their education. While concluding out may feel inoffensive to those who view calculation as unnecessary, this trend poses significant challenges for society. Mathematics serves as a foundational discipline for multitudinous scientific and technological careers, releasing from it not only narrows students' access to critical subject areas but also limits their future employment prospects and reduces the number of citizens competent in quantitative logic. This issue becomes increasingly critical as we aim to equip students with the chops needed to meet the rising demand for quantitative and computational knowledge in the 21st century (Schoenfeld & Li, 2019).

In the Philippines, students' mathematics performance—as reflected in their academic grades—is influenced by a range of perceived factors. This study specifically explores students' affective traits, particularly their study habits and attitudes, collectively referred to as study orientations (Biswas, 2015). Among students, managing time effectively and developing consistent study routines remain significant challenges. Recent observations suggest that many students spend insufficient time studying, often lack a structured schedule, and are unfamiliar with basic time management strategies (Peteros, 2024). A student's attitude toward studying plays a crucial role in how well and how deeply they learn, especially in subjects like mathematics that require both conceptual understanding and regular practice (Kaushar, 2013). When students exhibit weak study orientations, it often results in poor academic outcomes in math. Research

has shown a meaningful correlation between the level of study orientation and academic achievement (Silangan *et al.*, 2023).

It has been observed that many students encounter significant challenges in learning mathematics, which are influenced by various perceived factors affecting their academic performance. These factors can be categorized into three main areas: student-related factors, home-related factors, and teacher-related factors. These challenges often contribute to poor academic outcomes, including frequent tardiness, absenteeism, slow comprehension, and generally low academic achievement.

This study focuses on unveiling the possible difficulties in learning mathematics and the perceived factors affecting the academic performance of the students. The research assessed the factors and problems affecting the mathematics achievement of the Naga Senior High School and Alpaco Senior High School Grade level 11 students for the school year 2024 – 2025. The findings of the study will serve as the basis for a strategic intervention plan that will help the students improve their academic achievement as they aim for greater heights.

2. Purpose of the Study

This research assessed the factors and problems affecting the mathematics achievement of the Grade 11 students at the two public high schools in the City of Naga, Cebu, Philippines, for the school year 2024 – 2025.

Specifically, it sought answers to the following sub-problems:

- 1) To measure the extent to which the identified factors affect the academic performance of the respondents, such as student-related factors, home-related factors, and teacher-related factors.
- 2) To assess the extent to which the respondents experience the problems that hinder their learning in mathematics, such as emotional problems, school adjustment problems, and overextended schedule/workload problems.
- 3) To determine the level of mathematics achievement of the respondents
- 4) To test the relationship between the factors and the mathematics achievement of the respondents
- 5) To test the relationship between the problems and the mathematics achievement of the respondents

3. Materials and Methods

This study observed systematic data gathering practices to ensure that the data gathered are valid and reliable while ensuring that the targeted objectives are answered by the processed data.

3.1 Research Design

This research utilized a descriptive-correlational design, which aimed to determine the relationship between factors affecting the academic performance and the mathematics achievement of the respondents and experienced problems that hindered their learning in mathematics and mathematics achievement, using the data gathered from the survey questionnaire. Respondents were identified using random sampling, and they are all grade 11 students. The data gathered were organized, summarized, and statistically treated using the SPSS software in accordance with the objectives of the study.

3.2 Research Respondents

The respondents of this study were the Grade 11 students from Alpaco National High School and Naga National High School in the City of Naga, Cebu, Philippines, during the school year 2024 – 2025. Using simple random sampling, a total of 104 respondents were selected. The distribution of the respondents is presented in Table 1.

Table 1: Profile of the Respondents

| Profile | f | % |
|---------------|------------|---------------|
| Age | | |
| Above 17 | 6 | 5.77 |
| 17 | 16 | 15.38 |
| 16 | 82 | 78.85 |
| Total | 104 | 100.00 |
| Gender | | |
| Female | 74 | 71.15 |
| Male | 30 | 28.85 |
| Total | 104 | 100.00 |

As shown in the table, most of the respondents were 16 years old, followed by those aged 17 years. The respondents are also predominantly female students, who comprise 71.15 percent of the total.

3.3 Research Instrument

This research used a two-part survey to assess the variables examined. Part I used a survey questionnaire adapted from Modesto (2011), which assessed the extent to which the identified factors affected respondents' academic performance. Part II used a survey questionnaire developed by Ganal and Guiab (2014) to assess the extent to which respondents experienced problems that hindered their learning in mathematics. The respondents' mathematical achievement was determined by assessing their prior knowledge of Grade 11 mathematics subjects. Then, the researcher provided a 40-item multiple-choice test to the respondents to assess their mathematics achievements.

3.4 Data Gathering Process

The researcher observed proper procedures during the conduct of the study to ensure ethical practices in conducting research are complied. The researcher asked permission from the Schools Division Superintendent and the School Principal to conduct this study and further oriented the Principal about the study. Once permission was granted, the researcher conducted an orientation for the respondents and asked for informed parental consent for students who would participate in the study. In continuation, the researcher oriented the teacher on how the students would answer the questionnaire and gave them enough time to complete it to ensure a high rate of questionnaire retrieval. The researcher also oriented the teacher and the students about the achievement test that would be conducted later. The researcher then collected the data, sorted it, tallied it and summarized it based on the results. Moreover, the data were tabulated and analyzed using the appropriate statistical tool to interpret the results.

3.5 Data Analysis

The data collected during this study were tallied and summarized. Furthermore, the data were subjected to statistical treatment. Frequency counts were used to determine the number of respondents who belonged to a given category on their mathematics achievement test. The percentage was used to describe the proportion of respondents who belonged to a certain category on their achievement test, relative to the total number of respondents. The Weighted Mean was used to determine the extent to which the identified factors affected the respondents' academic performance and the extent to which they experienced problems that hindered their learning in mathematics. Pearson's r was utilized to test the significance of the relationship between the factors and the mathematics achievement of the respondents, and the significance of the relationship between the problems and the mathematics achievement of the respondents.

4. Results and Discussion

The results of the data gathered in accordance with the study's objectives are presented here. This also includes assessing the factors and problems affecting the respondents' mathematics achievement. The data on mathematics achievement and test results are also presented in this section.

4.1 Extent to Which the Identified Factors Affect the Academic Performance of the Respondents

The identified factors can significantly impact students' academic performance. These factors are influenced by various aspects, such as student-related, home-related, and teacher-related elements, all of which play a crucial role in shaping the students' learning process in mathematics. Therefore, these factors were examined and are presented in Table 2.

Table 2: Extent to Which the Identified Factors
 Affect the Academic Performance of the Respondents

| Components | WM | SD | Verbal Description |
|---------------------------------|-------------|-------------|----------------------------|
| Student-related Factors | 2.89 | 1.20 | Moderately Affected |
| Home-related Factors | 2.69 | 1.39 | Moderately Affected |
| Teacher-related Factors | 4.03 | 1.05 | Affected |
| Grand Mean | 3.20 | | Moderately Affected |
| Grand Standard Deviation | | 1.21 | |

Table 2 shows that the identified factors moderately affect respondents' academic performance in mathematics, particularly in the student-, home-, and teacher-related areas. These components highlight various influences that can affect students' learning, ultimately affecting their academic performance and achievements. Good academic performance is especially important for students who aim to continue their education and learning, despite various obstacles (Al-Muslimawi & Hamid, 2019).

Student academic performance has garnered significant attention in many studies, as the challenges in mathematics and science performance are influenced by a range of social, psychological, economic, environmental, and personal factors (Cabilan & Peteros, 2024). These factors can vary across individuals and countries, but generally have a strong impact on student performance. These factors can be categorized into internal and external classroom factors, both of which play a substantial role in influencing academic outcomes (Peteros, 2021). Internal classroom factors include the student's proficiency in English, class schedules, class size, textbooks, class test results, learning facilities, homework, classroom environment, course complexity, the teacher's role, use of technology, and exam systems. External classroom factors encompass extracurricular activities, family issues, work commitments, financial challenges, and other social problems (Mushtaq & Khan, 2012).

In general, the results suggest that the identified factors moderately influence students' academic performance. This implies that student-related, home-related, and teacher-related factors all play a role in shaping the learning process and ultimately affect the students' performance in mathematics.

4.2 Extent to Which the Respondents Experience the Problems that Hinder Their Learning in Mathematics

The problems experienced by the respondents can significantly influence their academic performance. These are shaped by various factors, including emotional problems, school adjustment problems, and overextended schedules/workloads problems. Each of these elements can disrupt the learning process, particularly in mathematics. Accordingly, these identified factors were examined and are presented in Table 3.

Table 3: Extent to Which the Respondents Experience
 the Problems that Hinder Their Learning in Mathematics

| Components | WM | SD | Verbal Description |
|---|-------------|-------------|--------------------|
| Emotional Problems | 3.05 | 1.11 | Sometimes |
| School Adjustment Problems | 2.67 | 1.10 | Sometimes |
| Over-extended Schedule/workloads Problems | 3.03 | 1.14 | Sometimes |
| Grand Mean | 2.92 | | Sometimes |
| Grand Standard Deviation | | 1.12 | |

Table 3 shows that the problems experienced by the respondents sometimes manifest in ways that hinder their learning of mathematics. These include emotional problems, school adjustment challenges, and overextended schedules/workload problems. Each of these components reflects the difficulties students face, which can negatively impact their academic performance. These problems often give rise to emotional distress that interferes with learning. Maintaining good academic performance is especially important for students who aspire to pursue higher education, despite the presence of such challenges (Al-Muslimawi & Hamid, 2019).

Many students struggle to stay attentive in class due to both school-related and non-school-related issues. School-related factors include unmotivated or unskilled teachers, inadequate educational services, and the lack of instructional materials. Non-school factors involve poverty, low educational attainment and literacy among parents or guardians, poor health, and malnutrition. Additional influences that affect students' academic performance include parental academic pressure, peer pressure, and psychological factors, which may be modifiable. Other factors, such as physical fitness, age, gender, technology use, stress, and sleep patterns, also affect academic performance, though they are often less easily modified (Fajar *et al.*, 2019).

In general, the findings suggest that students sometimes experience these problems, which hinder their ability to learn mathematics and impact their academic performance. These challenges may prevent students from fully focusing on their learning process and from reaching their full potential—especially in mathematics, a subject often perceived as difficult. These factors influence students' attitudes, cognitive capacity, knowledge acquisition, motivation, social interaction, health, and overall interest in learning.

4.3 Level of Academic Achievements of the Respondents

The level of academic achievement of the respondents is an important variable in this study, as it helps to explain the results. The data collected are presented in Table 4 below.

Table 4: Level of Mathematics Achievement of the Respondents

| Level | Numerical Range | f | % |
|---------------------|-----------------|--------------|---------------|
| Outstanding | 32-40 | 18 | 17.31 |
| Very Satisfactory | 24-31 | 25 | 24.04 |
| Satisfactory | 16-23 | 42 | 40.38 |
| Fairly Satisfactory | 8-15 | 19 | 18.27 |
| Poor | 0-7 | 0 | 0.00 |
| Total | | 104 | 100.00 |
| Mean | | 22.41 | |
| St. Dev. | | 7.13 | |

As shown in Table 4, 104 students took an achievement test in mathematics. Of these, 42 students (40.38%) achieved a satisfactory level, followed by 25 students (24.04%) who attained a very satisfactory level, 19 students (18.27%) who scored at a fairly satisfactory level, and 18 students (17.31%) who achieved an outstanding level.

This suggests that the majority of students reached only a satisfactory level in mathematics. Given the importance of mathematics education, as measured by international assessments such as PISA and Trends in International Mathematics and Science Study (TIMSS), which are indicators of a country's development, it is crucial to understand the various factors that contribute to these lower scores. Factors such as anxiety, emotional struggles, school adjustment difficulties, and workload challenges are likely to influence students' performance. There could be multiple reasons why many students only achieved satisfactory scores, including lack of motivation, ineffective study habits, cognitive challenges, and both internal and external factors, including health and well-being (de Vera *et al.*, 2022). These factors often interact and influence each other, collectively affecting students' academic performance (Carnoy *et al.*, 2016).

4.4 Correlation Analysis between Factors and Mathematics Achievements of the Respondents

This section presents the relationship between the respondent's factors and academic achievement, as shown in Table 5.

Table 5: Correlation Analysis between the Factors
and the Mathematics Achievement of the Respondents

| Variables | r-value | Strength of Correlation | p-value | Decision | Remarks |
|---|---------|-------------------------|---------|-----------|-------------|
| Factors and Mathematics Achievement | -0.306* | Weak Negative | 0.002 | Reject Ho | Significant |
| *significant at $p < 0.05$ (two-tailed) | | | | | |

Table 5 presents the results of the test on the significant relationship between various factors and the academic achievement of the respondents. Using the Pearson product-moment correlation coefficient, the p-value obtained was 0.002, which is less than 0.05.

This indicates a significant relationship between the two variables, leading to the rejection of the null hypothesis.

The results suggest that the factors affecting academic performance significantly impact the academic achievement of students. This implies that students who face these challenges struggle more with learning mathematics compared to those who do not encounter these issues. These findings align with the study by Payene (2023), which found that many students lack the motivation needed to focus on their studies and perform well in class. Low levels of motivation directly affect students' learning capacity and hinder their ability to achieve their academic goals. Additionally, Payene (2023) noted that a lack of support from the family can lead to academic failure. The home environment plays a critical role in a student's academic success, as what the child learns at home and how the family motivates them towards education greatly influences their performance in school (Jain & Mohta, 2019).

Moreover, Ganal and Guiab (2014) emphasized that the teacher plays a central role in creating the structure within which students learn. However, it is essential to consider students' learning styles and how they acquire knowledge as key factors in the teaching equation.

4.5 Correlation Analysis between Problems and Mathematics Achievements of the Respondents

This section presents the relationship of the respondent's problems experienced towards academic achievement, which is presented in Table 6.

Table 6: Correlation Analysis between the Problems and the Mathematics Achievement of the Respondents

| Variables | r-value | Strength of Correlation | p-value | Decision | Remarks |
|---|---------|-------------------------|---------|-----------|-------------|
| Problems and Mathematics Achievement | -0.202* | Negligible Negative | 0.040 | Reject Ho | Significant |
| *significant at $p < 0.05$ (two-tailed) | | | | | |

Table 6 presents the results of the test on the significant relationship between problems and academic achievement of the respondents. Using the Pearson product-moment correlation coefficient, the p-value obtained was 0.040, which is less than 0.05. This indicates a significant relationship between the two variables, leading to the rejection of the null hypothesis.

The results suggest that the problems experienced by the students significantly affect their academic performance and academic achievement. This implies that students facing these issues struggle more with learning mathematics compared to those who do not experience such problems. These findings are supported by Acharya (2017), who found that a significant number of students fail in mathematics. This issue has profound consequences, as it involves a considerable amount of time, money, effort, and resources

at the national level, as well as subject matter, teacher factors, curriculum adjustments, available problem-solving methods, and extracurricular activities. Educationists and policymakers are grappling with the declining achievement in mathematics. Students encounter a variety of problems, including both student-related and home-related factors, which impact their ability to learn and apply mathematics, ultimately hindering their academic success.

Furthermore, Vargas (2021) highlights that many students experience difficulties with mathematical tasks, leading to feelings of frustration, anxiety, and social rejection, all of which can impede academic progress. According to Enu *et al.* (2015), academic performance is influenced by several factors and problems, including admission grades, socioeconomic status, school background, and more. Personal and school-based factors also play a critical role in shaping students' academic outcomes.

As Carnoy *et al.* (2016) note, mathematics education is significant, as reflected in international assessments such as PISA and TIMSS, which serve as indicators of a country's development. It is essential to examine the various factors and challenges—including emotional struggles, school adjustment difficulties, and excessive workloads—that may contribute to low mathematics scores. This understanding is vital for developing clinical strategies, diagnostic approaches, and interventions to improve students' performance in mathematics.

5. Conclusion

Based on the study's findings, it can be concluded that the respondents' identified factors and experienced problems significantly affect their performance in mathematics. These factors and problems are key contributors to their low academic performance. Such issues should not be overlooked, as they can lead students to develop a negative impression of both the subject and themselves, which, in turn, can further affect their academic performance. While other variables may also contribute to low scores or academic achievement, the results suggest that the primary challenges stem from factors such as emotional struggles, school adjustment issues, and workload burdens. Furthermore, given that most of the respondents were 16 years old and in Grade 11, it can be inferred that they find it difficult to adjust to the nature of mathematics at the senior high school level, especially when confronted with various factors and problems that hinder their learning. The transition period between junior and senior high school is crucial, as the mathematical foundation established in junior high and elementary school may not be sufficient for the more advanced topics introduced in senior high school. This transition may partly explain the challenges these students face in the subject. Moreover, students often encounter difficulties in adjusting to the academic environment and requirements of senior high school, especially during the shift from junior high. Additionally, certain aspects of the respondents' profiles, such as socioeconomic factors and family background, may be investigated to identify factors that affect their academic performance.

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Conflict of Interest Statement

The author declares no conflict of interest.

About the Author

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