# Factors Affecting Learners' Performance in General Mathematics at Phinma-Coc

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## ABSTRACT

In schools throughout the world, Mathematics is regarded as the most significant subject. Unfortunately, because of the multiple barriers that keep them from fully participating, many students in the Philippines find it difficult. Students have a hard time when solving activities in General Mathematics. This study aimed to 1) determine the factors that affect learners' performance, 2) determine levels of learner's quarterly performance, and 3) determine the significant relationship between factors affecting learners' performance and the learners' performance in General Mathematics at PHINMA-Cagayan de Oro College, School Year 2022-2023. The data was gathered among nine hundred thirty-one (931) General Mathematics learners. In this study, descriptive research design, particularly the descriptive correlational method, was applied. This study made use of a descriptive research design. The questionnaire used was adopted from TIMSS (2007) and PANORAMAED (2015). The statistical tool used frequency, mean, standard deviation, and Pearson Correlation to get the relationship between the two variables.

The study showed that the majority of the respondents got satisfactory. Among three (3) factors that can affect learners' performance, teacher-related factor got the highest followed by family-related factor and learner-related factor respectively. There is a significant relationship between learners' and teacher-related factors and learners' performance in General Mathematics.

It is concluded that the learners appreciated the teacher's efforts and positive traits. Additionally, students acknowledged their hard work in describing the subject in General Mathematics in the best methods possible. It is recommended that teachers keep their distinctive qualities while also finding new approachesto conduct discussions about Mathematics. To prevent students from forgetting the material quickly and to foster an interest in the subject and excellent study habits, teachers should also offer techniques for addressing these problems.

**Keywords:** learner-related, teacher-related, family-related

## THE PROBLEM

### Introduction

Mathematics is regarded as the most important subject in schools globally. However, many students in the Philippines struggle with it due to the various obstacles that prevent them from fully engaging in it (Program for International Student Assessment, 2019). Despite the various reports and recommendations that have been made regarding education in the country, it is widely acknowledged that Mathematics is regarded as one of the toughest subjects that students are taught in schools.

PHINMA Cagayan de Oro College Senior High School Department conducted a Diagnostic test for Grade 11 students in English, Mathematics, and Science subjects to determine students' individual strengths, weaknesses, knowledge, and skills before instruction. The Diagnostic test results in Mathematics conducted for Grade 11 students during the School Year 2021-2022 showed Beginner level. Learners in this category are below the minimum required mastery of skills and competencies. The results may be unexpected, but

then it is better to identify the students' prior knowledge in order for the school administrators and teachers to discover solutions to improve the mathematics ability of the students enrolled in the SHS Department in PHINMA COC. Nonetheless, the issue of poor Mathematics performance appears to be present at all levels of education. This is a major challenge should be addressed by the teachers involved, as well as the Department of Education.

Many studies and reports have already identified various factors for poor math performance. However, this study will contribute to the students, teachers, and community to achieve sustainable solutions that are relevant, particularly during the pandemic. According to the Department of Education (2019), the National Achievement Test (NAT) result under the Department of Education presents the National Performance by subject area. The percentage distribution of Grade 12 Test Takers based on Proficiency Level in Mathematics that no Grade 12 falls under proficient level. A very high percentage of test takers were identified under low and not proficient levels. To the finding and conclusion of the results of 2018 NAT Grade 12, all subject areas were recorded with a varied mean percentage score, with Media and Information Literacy recorded as the highest mean, followed by Language and Communication, while Mathematics and Science registered the lowest. Also, Grade 12 learners consistently performed below the level of acceptablein all subject areas.

As recommended based on the findings and conclusion, School heads should focus more on instructional materials preparation among teachers; time on task must be observed strictly. Teachers must adhere to 6- hour daily teaching and 2-hour instructional materials preparation. Also, teachers should be deloaded from ancillary services to give focus on classroom instruction.

For that reason, this study wants to determine the factors that affect the learner's performance in terms of Mathematics. Educators, trainers, and researchers have long been interested in exploring variables contributing effectively to the quality of performance of learners. These variables are inside and outside school, which affects students' quality of academic achievement. These factors may include student, family, school, and peer factors. A range of factors affects students' quality of performance (Waters & Marzano, 2016). This study wants to identify the most contributing factors that are challenging students that affect academic performance. The factors in this study are termed Learners-related, Teachers-related, and Family- related.

Truly, students regard Mathematics as one of the most challenging topics in school, yet it is an important subject. Mathematics is the study of assumptions, properties, and applications. It must retain the order of assumptions, properties, and applications when teaching. To achieve the desired goal of teaching Mathematics, this order must be preserved in projects (Yadav, 2017). Since it is one of the importantsubjects in school, students must have a strong mathematical foundation in order to apply its concepts intheir daily lives.

In light of the above scenario, the researcher of this study wants to investigate the factors affecting Grade 11 learners' performance in General Mathematics at PHINMA COC.

## Theoretical and Conceptual Framework

This study is anchored on the Transformative Learning Theory (TLT) developed by Jack Mezirow in the mid to late 1980s and early 1990s. TLT is a model of andragogy that attempts to reveal and clarify a learner's prior assumptions and then transform these assumptions into new understandings. According to Illeris (2018) that the process of transforming the taken-for-granted frames of reference (meaning schemes, habits of mind, mindsets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more accurate or justified to guide action.

The Transformative Learning Theory (TLT) is useful because educators, especially in Mathematics, must know that students tend to stop learning when things get uncomfortable. For instance, when students solve a problem, and it is difficult for them to continue solving, they tend to surrender and decide not to do Mathematical activity. Teachers should teach students the importance of transforming their knowledge to create competent individuals and use this to actually examine the student's own beliefs about their education, especially in Mathematics.

The researcher needs to identify the factors affecting students' academic performance to avoid negative attitudes. The system of education in the Philippines should promote a positive attitude toward learning or a positive attitude towards Mathematics. Sunghwan and Son (2021) recommended that teachers have a critical role in instilling healthy attitudes in students within and beyond the classroom. Teachers must respond to each student's demands because students have varying abilities and capabilities. The primary goal is toassist students in better understanding the Mathematical ideas taught in the classroom. Teachers must also possess good qualities so students can approach them confidently if they are having trouble completing activities or do not fully comprehend the subjects being taught. The integration of data provides a more in- depth understanding of the different variables, which allows for the exploration of different routes inpromoting positive attitudes toward Mathematics (Mazana et al., 2019).

PHINMA COC School Mission is to develop Filipino youth into employable global professionals thru the endowment of knowledge and skills and the formation of character and spirit. Its school vision, with the distinct advantage of English Communication and Information Technology, is to be the leading institutionof higher learning in the region in the development of globally competitive professionals. By the power ofits mission and vision, school administrators, teachers and students hold with its words to improve the education system in the Philippines to be globally competent, and the role of the school administrators and teachers is to be the region's top-ranked institution of higher learning for producing professionals who can compete internationally. To be able to fulfill its mission and vision, the people part of the institution must produce a study intended for PHINMA COC in order to achieve a justifiable solution to the problems that may occur in the institution. For that reason, this study will contribute to achieving a sustainable resolutionto problems that arise from this specific study about factors affecting learners' performance in General Mathematics in PHINMA COC.

Figure 1 presents the conceptual framework of the study. The independent variables are learners-related, teacher-related, and family-related factors, while the dependent variable is the academic performance in General Mathematics among the Grade 11 students of PHINMA COC during the 1st Semester of School Year 2022-2023.

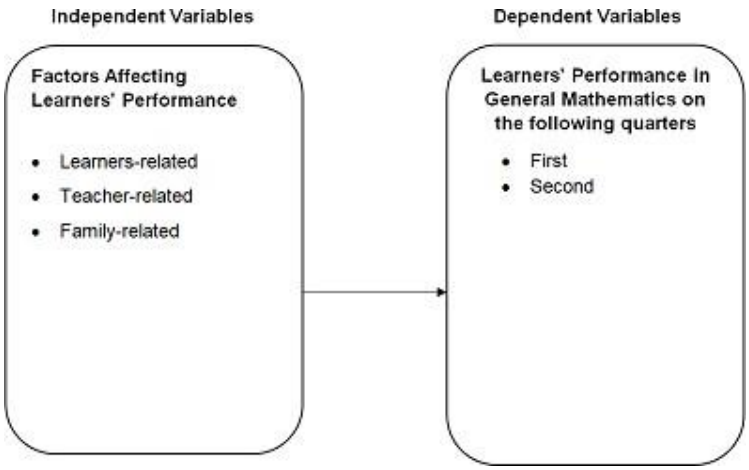


**Figure 1. The Schematic Presentation showing the Interplay between the Independent and Dependent Variables of the study**

**Statement of the Problem**

This study aimed to determine the factors affecting learners' performance in General Mathematics among Grade 11 students in PHINMA Cagayan de Oro College School Year 2022-2023.

Specifically, this paper sought to answer the following questions:

1. What are the factors affecting learners' performance in General Mathematics considering the following:

Learner-related;

Teacher-related; and

Family-related factor?

2. What is the level of learners' performance in General Mathematics on the following:

First Quarter; and

Second Quarter?

3. Is there a significant relationship between the factors affecting learners' performance and their performance in General Mathematics?

**Hypothesis**

Problems 1 and 2 were hypotheses-free. On the basis of Problem 3, the null hypothesis was tested at a 0.05 level of significance.

**$H_0$:** There is no significant relationship between the factors affecting learners' performance and their performance in General Mathematics.

**Significance of the Study**

The information gathered in this study will benefit the following:

This study would help the School Administrators become more supportive and motivated to develop activities to improve programs for school advancement that can enhance students' performance in General Mathematics.

This may serve as an eye-opener for the teacher to create and innovate instructional materials and to use varied and appropriate teaching strategies.

The students would develop their interest in Statistics and Probability and appreciate the importance of Mathematics in their daily lives. They will appreciate their teachers' efforts for their development in the subject area.

This helps the parents with the education of their children considering school performance in a different discipline.

Lastly, this research can contribute to future researchers as they collect data and think of what could have been better.

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### Scope and Limitation of the Study

This study focused mainly on the learners' performance in General Mathematics at PHINMA COC from different academic strands during the SY 2022-2023 and its relationship to Learners-related, Teachers- related, and Family-related factors.

The following academic strands are General Academic Strand (GAS), Humanities and Social ScienceStrand (HUMSS), Science, Technology, Engineering and Mathematics (STEM), and Accountancy, Business, and Management (ABM). The information needed was gathered from the Grade 11 General Mathematics subject using the checklist-style questionnaire. The researchers want to know if there is a significant relationship between the learner's performance in General Mathematics and the student's performance.

### Definition of Terms

For better clarification and understanding of the terms related to this study, the following terms are defined conceptually and operationally.

**Family-related Factor.** This refers to the respondents' parents/guardian financial support and perception of the child's achievement in General Mathematics.

**General Mathematics.** This refers to the subject in Senior High School 1st Semester Grade 11 students. It covers the following concepts compositions functions, intercepts, zeroes, asymptotes of rational functions, the inverse of a one-to-one function, and simple and compound interest.

**Learners' Performance.** This refers to the respondents' grades during the 1st and 2nd Quarters in General Mathematics during SY 2022-2023.

**Learner-related Factors**. This refers to the learner's performance in General Mathematics in terms of their interests, preferences, and study habits.

**Teacher-related Factor**. This refers to the teachers' strategies and supports to students learning in General Mathematics.

## REVIEW OF RELATED LITERATURE AND STUDIES

This chapter discusses the variables affecting learners' academic performance in General Mathematics, and other variables are also considered, such as learner-related, teacher-related, and family-related.

### Learners-Related Factors

According to research findings, the factors most strongly influencing students' achievement were learner-related features (Ker, 2016). Based on Verešová and Malá (2016), academic achievement is significantly predicted by attitudes toward education and learning. Critically, in relation to this knowledge, it is realized that an attitude alone is not the only predictor of human behavior, but the research objective is to verify that the ABC model (an affective, behavioral, and cognitive component of attitude) predicts adolescents' academic achievement in terms of Grade Point Average (GPA).

The researcher wanted to determine if sex significantly impacts a respondent's academic performance and which among the male and females has performed best when it comes to General Mathematics subject. First, it is important to understand if there is a difference between girls' and boys' school achievements. According to Egorova (2016), academic achievement in Mathematics differs for boys and girls, but the

direction of difference varies depending on how achievement is measured. Girls have higher school grades, while boys have higher national examination test scores. Within the group of high school students with a positive mathematical self-concept, girls outperform boys in mathematical achievement.

In contrast with Asante (2019), high school males outperformed females in Mathematics performance. During this stage, girls begin to establish their feminine identity firmly and thus become susceptible tosocial and environmental pressures that undermine their self-confidence and performance in the male-dominated subject like Mathematics.

The findings of the study highlight the correlation between achievement and a positive attitude toward the course, motivation, and affective traits, including fear, tension, and belonging (Verešová & Malá, 2016). Students' positive attitudes in learning Mathematics are influenced by employing a character-integrated thematic learning model, as well as their character traits such as cooperation, self-confidence, and kindness. The findings show that adopting a character-integrated thematic model to teach Mathematics impacts students' learning interests while also molding character traits, including cooperation, honesty, confidence, and good manners. Every stakeholder must work together to help students develop positive character traits that they may apply in their daily lives in the home, school, and community. Teachers, as the primarymentors of students in the classroom, must be innovative in developing these traits, using the appropriate methods, approaches, and strategic pedagogies (Syamsuddin et al., 2021).

Similarly, according to Maharani (2021), Mathematics teaching materials contain local wisdom that includes character values such as logical thinking, critical thinking, hard work, curiosity, independence, honesty, democracy, and self-confidence. This Mathematics teaching resource was created with thematic learning in mind. Students can solve issues on worksheets provided in the teaching materials, and there isalso an opportunity to write reports on their work in groups. Local wisdom-based Mathematics teaching resources are easily grasped by students and are acceptable as teaching materials during a pandemic to strengthen and harden students.

Additionally, according to Duta (2016), both male and female respondents had similar views when assessing the importance of incentives to study. Understanding personal needs and learning objectives provide increased interest. Teachers' teaching style positively affects positive attitudes toward learning, intense participation in classroom activities through modern methods, discussion, and effective communication techniques increase learning interest and the emphasis on the essentialization of the quality of the information in the act of teaching and not on quantity determines dynamic content to teach positive motivation. Subjects that are engaging, appealing, and have practical and applicable support influenceinterest in learning. Furthermore, teachers excite students, and completing work without drive is challenging. Positive attitudes in learning are helpful for the achievement of the objective for teachers.

Moreover, many students struggle with Mathematics because they never develop the study habits necessary for success in Mathematics subject. According to Jafari et al.(2019), it is advised that students' study habits be considered and assessed at the time of enrollment to university and that particular training be provided to them in order to assist them in developing or adjusting study habits in order to improve their academic results. It also revealed that effective study habits lead to improved Mathematics performance. It was also discovered that students with good study habits do better than those with poor study habits. According to the data, poor Mathematics achievement is caused by a lack of excellent study habits (Odiri, 2016).

Similarly, according to Capuno (2019), students' attitudes and study habits have a substantial impact on their Mathematics ability. Furthermore, in order to increase students' Mathematics performance, theseattitudes and study habits must be modified. Moreover, students' participation in school activities must be observed and considered, as this could be another factor affecting respondents' mathematics ability. Because students who participate in extracurricular activities occasionally skip Mathematics classes, too much exposure to these activities may damage their performance in the discipline if not regulated.

According to Tus (2020), students must recognize the relevance of studying habits that they must improve. This would benefit Senior High School students because they will only be in college for a few years. Students must build and improve their study habits in general. It may inspire them to be better and more excellent in class. And will lead to the study of Tus that school officials must develop programs to improve students' study habits in order to improve their academic achievement. As a result, teachers should concentrate on activities that will keep students actively involved in the classroom and improve their academic performance.

Likewise, based on the findings of this study, it can be inferred that students with good study habits outperformed students with bad study habits in terms of Mathematics achievement. It is also established that Mathematics achievement does not differ much between boys and girls with good study habits (Bassey & Edoho, 2018).

**Teacher-Related Factors**

Personality traits are a mix of features that are inherent in people as individuals and attributes that emerge from unique life events. A person's personality traits play a significant role in determining his level of achievement. Certain personality traits aid teachers and students in their success. For various people, success might mean different things. Regardless of how success is defined, teachers and students with the majorityof the following attributes are virtually always successful.

One of the traits that a teacher must have is being creative. This is the ability to solve an issue through innovative thought. Teachers with this feature can use their creativity to establish a welcoming classroom environment, produce engaging lessons, and include ways to personalize teachings for each student. One example of being a creative educator in Mathematics is being humorous in teaching Mathematics. According to Menezes (2017), humor in Mathematics teaching combines the affective and cognitive functions to design and implement amusing Mathematical challenges to teach Mathematics. By doing so, it offers a type of comedy introduced into Mathematical activities that challenge students' intelligence and encourage them to apply Mathematics. It is believed that through completing these types of challenges, students become mathematically competent.

According to the study of Binfet and Passmore (2017), a significant positive relationship was determined between the variables of the personal values of the teacher candidates and their attitudes towards the teaching profession. The study obtained indication that personal values are of great significance in predicting the attitude towards the teaching profession. Moreover, when the independent variables were found to be significant in explaining teachers' attitudes toward the teaching profession.

Similarly, the study by You et al. (2021) found that the strongest predictor of students' Mathematics ability at the school level was student and teacher interaction, followed by teacher support, classroom management, teacher-directed teaching, and cognitive activation. Again, teacher support and teacher- directed instruction negatively predicted mathematical achievement, but the student and teacher connection, classroom management, and cognitive engagement positively predicted Mathematical achievement.

When working as a teacher, teaching skills in Mathematics must be advanced level. These abilities assist a teacher in keeping their students engaged and motivated in learning. They know the most desirable teaching skills and how to showcase them. According to Levy (2018), what teachers recommend to students to be successful in Mathematics are the following: build confidence, encourage questioning and make space for curiosity, emphasize conceptual understanding over procedure, and provide authentic problems that increase students' drive to engage with math and share positive attitudes about Mathematics.

It was discovered that self-confidence had a favorable and modest impact. However, there was no distinction between students in primary and secondary schools in this aspect. These findings suggest thatone of the key factors influencing arithmetic achievement is self-confidence (Çiftçi & Y?ld?z, 2019).Nevertheless, it is contrary to the study of Kunhertanti and Santosa (2018). Based on the results of the data analysis, it could be concluded that students' self-confidence has no significant effect on student achievement. The findings indicate that there is no discernible impact. Due to the sampling's narrow scope, this is possible. The favorable relationship between students' achievement and self-confidence can also be impacted by a number of other factors.

In terms of the result about curiosity, positive attitudes towards Mathematics, and Motivation of students that affect students' achievement, according to Jaen and Baccay (2016), there is a significant determinant of motivation in the performance of Mathematics. Learners' positive attitudes can increase learner engagement and motivation in Mathematics. Based on the study's findings, the researchers suggest that teachers use more effective learning strategies to make the subject important and useful to students in order to prevent negative outcomes. Future research may also take into account covering a wider range of respondents and differences in responses, as well as a larger scope of respondents and differences in respondents.

When instructors teach critical thinking skills, students will be able to find the necessary information needed, evaluate the advantages and consequences of the information, and solve problems. Critical thinking allows students to process information in a logical manner and to prepare themselves for self-directed learning. Students with critical thinking skills can determine what information is important and what is irrelevant or not useful. Such students can identify logical errors but can be open to other points-of-view and reappraise their core values, opinions, and knowledge, as well as determine what information is importantand eliminate data that is non-useful, irrelevant, and biased information. Students with critical thinkingskills can also weigh various facts and points-of-view and identify logical errors, thus helping to solve problems.

Moreover, critical thinking brings about clarity of perception, vision, and a logical communication method of explanation. If a student can think critically and solve problems independently and systematically, and logically, the student will be able to succeed in making wise decisions across all areas where decisions need to be made. The critical thinker can make educational decisions, understand options and expand knowledge though creative problem-solving. A critically thinking student can realize that one can select the correct response or respond to any problem or decision that might arise. The teacher's role is to focus on those characteristics of active mathematical strategies, promoting critical thinking and metacognition for life (Su et al.,2016).

Many authors have written about how to employ instructional materials or to teach aids to improve teaching for intended social and behavioral change. Instructional Materials (IMs) have a distinguishing feature that makes them unique. A study from Edoho et al. (2020) concluded that using instructional resources in the classroom considerably impacts students' academic performance in mathematics. As a result, all levels of government should supply instructional resources to all schools and encourage their use in the teaching and learning of mathematics and other topics.

According to Yusta ( 2016 ), visual materials like books and Mathematics kits are good sources in schools. However, in almost all schools, audio-visual resources were the most inaccessible. The lack of such materials may have influenced how counting, measuring, and classifying numbers were taught and learned.It was also evident that the various schools under investigation lacked enough instructional resources.

Contrary to this, Capuno et al. (2019) conclude that there is no significant association between instructional media use and respondents' academic achievement since students' academic performance is not reliant on

their use of instructional media. Another avenue of intellectual dialogue about the efficacy of technology among students in a developing country like the Philippines is opened by the teacher's use of instructional media. Students are more likely to embrace ownership of their learning when they feel empowered by technology. Students may have little attachment to the subject if it is delivered via lecture. This study provides a solid foundation for understanding how technology can be used effectively in andragogy and education.

Overall, teachers' positive attitudes should be present in their characteristics as a teacher or as a person. Having a positive attitude being a teacher can have a big factor that can influence students for the greater good in their character or as a person. It can mold the students' character as well as they could ever know. That is a beautiful goal of a teacher, to develop students in their academic and also develop their holistic characteristics.

According to Olubukola (2018), the professional attitudes of teachers were the subject of investigation. The success of secondary education in Nigeria is significantly influenced by teachers. The study's main topic was one of the secondary school teacher's expected professional attitudes. Professional attitudes of teachers include communication, classroom management, pedagogical knowledge, and subject expertise. Future researchers, however, can examine other professional attitudes expected of instructors that were not examined in this study. Future researchers can broaden the study's sample and use other instruments in addition to the questionnaire to collect data from respondents in the methodology area.

**Family-Related Factors**

According to the literature, a student's academic success may also be influenced by the household traits in which they are raised. One of the critical things that affect achievement is family that is according to Hurn (2016). Parents of students who perform poorly academically are more likely to be less educated, to work in low-paying jobs, to migrate, to speak a language other than English at home rather than the language of instruction, and to have come from a remote area.

The explanatory power of Socioeconomic Status (SES) factors for student achievement varies in different countries. In addition to being directly associated with academic accomplishment, the Socioeconomic status of the student's upbringing is also indirectly related through a number of interaction systems, such as the students' racial and ethnic backgrounds, grade levels, and school/neighborhood locations. For instance, the family's socioeconomic status (SES), which will largely determine the child's neighborhood and school, not only provides resources for the home but also indirectly builds supportive relationships between structural forces and people (like parent-school relationships) through social capital. Through social capital, the SES encourages the exchange of social norms and values that are necessary for pupils to excel in the classroom. It is hypothesized that socioeconomic factors such as parents' greatest degree of education, parents' highest level of employment, family size, and family income play a significant role in determining accomplishment (Harju-Luukkainen et al. 2020).

According to the literature and studies mentioned above, that positive attitudes in learning Mathematics and study habits affect the performance of the students for the Learners-related factor. Student-teacher interaction, instructional materials, and positive relationship between learners and teachers have the strongest predictors of students' mathematical ability for teacher-related factors, family financial, parents involvement and support influence the students Mathematical success in Family-related factor.

## RESEARCH METHODOLOGY

This chapter presented the research design, research setting, respondents and sampling procedure, research instrument, validation of the instrument, data gathering procedure, the system of scoring, and statistical treatment of data.

## Research Design

This study determined the factors affecting learners' performance and learners' performance in General Mathematics at PHINMA Cagayan de Oro College. The descriptive research– correlation method was used in this study.

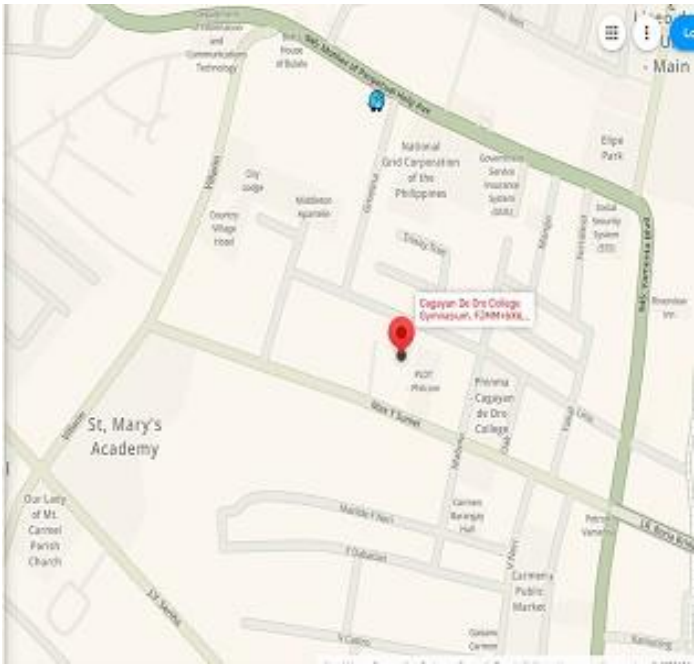
Since this study measured data thru tabulating facts, involving proper analyses, interpretation, and determining relationships between two (2) variables, the descriptive research – correlation method of studies is best suited. As mentioned, the learner-related factors, teacher-related factors, and teacher-related factors were adopted using adopted questionnaire.

## Research Setting

PHINMA Cagayan de Oro College was founded in 1948 as a non-political and non-sectarian educational institution. The school provided education from primary to higher levels to the youth and working folks. PHINMA COC expanded its course offerings during the next 30 years to include Computer Science, Engineering, and Mass Communications.

PHINMA COC was able to provide quality education to children from all walks of life in Mindanao as part of PHINMA. PHINMA also assisted in creating a positive learning atmosphere that encouraged them to continue their study.

The researcher chose this setting for the reason that the researcher also happens to teach in the said school at the present time and also teaches Statistics and probability subjects which are the variables of the study. The said setting is located at Max Y. Suniel Street, Carmen, Cagayan de Oro City, Misamis Oriental, Philippines. The researcher selected the Senior High School Department, and it has an Academic strand ofthe following: Accountancy, Business, and Management (ABM); Science, Technology, Engineering, and Mathematics (STEM); Humanities and Social Sciences (HUMSS); and General Academic Strand (GAS) were the respondents of the study.




**Source: https://www.waze.com/live-map/directions/ph/northern-mindanao/cdo/**

**Figure 2. Map of PHINMA Cagayan de Oro College**

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**Respondents and Sampling Procedure**

The respondents of the study were the nine hundred thirty-one (931) learners in General Mathematics at PHINMA-Cagayan de Oro College, School Year 2022-2023. The participants were selected randomly. The researcher used Slovin's formula with a five percent (5%) margin of error and a population of 2,541 in determining the sample size of respondents.

**Table A Distribution of Respondents**

| Academic Strand | Population | Sample Size |
|---|---|---|
| ABM | 378 | 191 |
| GAS | 937 | 273 |
| HUMSS | 463 | 211 |
| STEM | 763 | 256 |
| Total | 2,541 | 931 |

**Research Instrument**

The researcher instrument that was used in this study was composed of three (3) parts. The main tool used in this study was a questionnaire – checklist. A set of questionnaire-checklist was constructed for the student respondents.

Part 1 was about Learner-related factor that was adopted from the Trends in International Mathematics and Science Study (TIMSS) 2007 student questionnaire.

Part 2 was about Teacher-related factor that is an adopted questionnaire from the PHINMA Ed students' formative feedback for teacher's survey questions. It was modified to fit the need and characteristics of the respondents as well as the purpose of the study.

Part 3 was about Family-related factor that is adopted from PANORAMA Education Family-School Relationships Survey 2015. This study was modified to aid educational institutions in identifying their primary areas of strength and need for development.

**Data Gathering Procedure**

Preliminary preparation for the conduct of data gathering was to ask permission from the Dean of Graduate School to allow the researcher to conduct the study and administer the research instruments to the respondents. Upon approval, appointments for the administration of the questionnaires were asked from the PHINMA-COC Senior High School principal. Care was observed especially with the current situation weare experiencing. Social distancing was properly observed.

During the data gathering, the researcher administered and retrieved the set of questionnaires throughGoogle Forms. The student respondents were given a set of questionnaires. One part asked for the Learner- related factor, while the second part was a type of questionnaire about Teacher-related factor. And the last part was a set of questionnaires asking for Family related factor. The researcher patiently analyzes the answers to each item for tabulation, analysis, and interpretation.

**Categorization of Variables and System of Scoring**

**Factors affecting Learners' Performance**

| Scale | Range | Description | Interpretation |
|---|---|---|---|
| 4 | 3.26 – 4.00 | At all times | Very High |
| 3 | 2.51 – 3.25 | Most of the time | High |
| 2 | 1.76 – 2.50 | Sometimes | Low |
| 1 | 1.00 – 1.75 | Never | Very Low |

**Academic Performance in General Mathematics**

| Range | Description | Interpretation |
|---|---|---|
| 90 – 100 | Outstanding | Very High |
| 85 – 89 | Very Satisfactory | High |
| 80 – 84 | Satisfactory | Moderate |
| 75 – 79 | Fairly Satisfactory | Low |
| Below 75 | Did not meet Expectation | Very Low |

**Statistical Treatment of Data**

Descriptive statistics such as frequency, percentage, mean, and standard deviation were utilized to describe the variables of the study. Pearson Correlation Coefficient was used to determine the significant relationship between the independent and dependent variables of the study.

Weighted Mean was used in Problem 1 on the factors affecting learners' performance in General Mathematics.

For Problem 2 on the level of learners' performance in General Mathematics for both the First and Second Quarters, the statistical tool was the mean and standard deviation.

Problem 3, Pearson Correlation Coefficient, was used to establish the relationship between the factors affecting learners' performance and learners' performance in General Mathematics.

## PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents an analysis and interpretation of the data gathered from the students of SHS Department at PHINMA Cagayan de Oro College to determine the factors affecting learners' performance in General Mathematics subject.

**Problem 1: What are the factors affecting learners' performance in General Mathematics considering the following:**

**Learner-related;**

**Teacher-related; and**

**Family-related factor?**

**Table 1 Distribution of Respondents' Factors Affecting their Performance in General Mathematics considering Learner-Related**

| LEARNER FACTORS | Mean | SD | Description |
|---|---|---|---|
| I make myself prepared for the General Mathematics subject. | 3.20 | 0.57 | Most of the time |
| I listen attentively to the lecture of my Mathematics teacher. | 3.41 | 0.58 | At all times |
| I actively participate in the discussion, answering exercises and/or clarifying things I did not understand. | 3.10 | 0.65 | Most of the time |
| I get frustrated when the discussion is interrupted or the teacher is absent | 2.85 | 0.74 | Most of the time |
| I usually do well in General Mathematics. | 2.76 | 0.70 | Most of the time |
| I learn things quickly in mathematics. | 2.58 | 0.74 | Most of the time |
| Mathematics is harder for me than any other subject. | 2.99 | 0.81 | Most of the time |
| I am good at working out difficult mathematics problems. | 2.50 | 0.73 | Sometimes |

**Legend: 3.26-4:00 – At all times/Very High 2.51-3.25 – Most of the times/High 1.76-2.50 – Sometimes/Low 1.00-1.75 – Never/Very Low**

Table 1 presents the distribution of respondents' factors affecting their performance in General Mathematics considering Learner-related with an **overall mean** of 3.01 (SD=0.35) and described as **Most of the time**. This means the fact that the Learner-related factor is **high**. This implies that in terms of students' efforts, itis obtainable for them. They claim confidence in the hard work that they have exerted in learning the General Mathematics subject. They give high credit to the indicators that best describe their labors and efforts in the Mathematics subject in PHINMA-COC. The researcher also observes that some of the students are not confident with the rating that they have given to themselves. However, when it comes to the work they have put into the subject, they have pledged to put out their full effort. However, the key question is whether or not this effort has any bearing on the students' marks.

Findings from the research indicated that learner-related characteristics had the greatest influence on students' achievement. According to Chowa et al. (2016), students themselves may be good indicators of success. The student's gender, absences from school, early numeracy and reading skills, preschool education, perspectives, attitudes, and how frequently the student speaks the test language at home are some of the crucial learner-related factors. A student's traits or positive outlook on a subject or learning are a good sign that they will achieve their objectives. If this attribute was developed early, students could easily or quickly catch up to the instructions or discussions.

The indicator, "**I listen attentively to the lecture of my Mathematics teacher,"** got the **highest mean** of 3.41 (SD=0.58), described as **At all times**. This means that the learner-related factor is **very high** and that they are attentively listening to their Mathematics teacher all the time. This implies that the students are listening attentively during General Mathematics discussions. Listening is an important technique in learning Mathematics because learners can cope with their difficulties in Mathematics through note-takingon the important part concepts notes, the given problems, and solutions with answers which is appropriate because of the reason the school has parallel classes called Flex learning. The researcher also observes that they can steadily follow the discussion in order for the learner to understand the lesson. This indicates thatthe pupils do well in General Mathematics class.

According to the findings of the study by Cabanalan (2020) that the listening-attentive coping style of the proficient students was those who paid closer attention to what they were listening to in class. In order to conceptually increase their knowledge or comprehension and master more Mathematics skills, proficient

students listened carefully to the teacher. The secret to success in studying Mathematics is having active listening abilities, which are enhanced by effective communication skills. On the other hand, the findings of this study revealed that students at a developing level did not pay much attention to listening. Perhaps listening attentively to the teacher's lecture also mattered for developing children.

On the other hand, the indicator "***I am good at working out difficult mathematics problems"*** **got** the **lowest mean** of 2.50 (SD=0.73), described as **Sometimes.** This means that the learner-related factor is **low.** This implies that they are good at working out difficult Mathematics problems sometimes or not all the time. It signifies that working on difficult Mathematics problems is not easy for them at all times. Even though they listen attentively to the lecture, they find difficult Mathematics problems if they are asked to work them out on their own. Learners do not have that confidence in working problems in General Mathematics or the fear of making mistakes, or do not have an interest in the subject or topic. PHINMA COC provides AL toolkit for teachers. Inside the AL toolkit are different kinds of strategies that can be used by teachers and students.

According to Moneva et al. (2020), self-confidence is one of the essential qualities that every student should possess because it helps them lessen their difficulty in Mathematics. It implies that these students must have a positive attitude toward Mathematics. Part of the positive attitude is self-confidence in order for the students to manifest they are being timid in Mathematics class. When students overcome being timid and showcase their capabilities and potential in Mathematics, then this could mean that they can cope with the difficulty.

**Table 2 Distribution of Respondents' factors affecting their Performance in General Mathematics considering Teacher-related**

| TEACHER-FACTOR | Mean | SD | Description |
|---|---|---|---|
| Consistently sends calls and messages to check how I am doing in my learning activities in mathematics | 2.98 | 0.63 | Most of the time |
| Gives clear instructions about the things I need to do for my mathematics module | 3.33 | 0.60 | At all times |
| Answers well my questions about math lessons in the modules through calls or texts. | 3.00 | 0.70 | Most of the time |
| Provides feedback about my work, so that I know what it is that I did right and how else I can improve. | 3.13 | 0.63 | Most of the time |
| Encourages me to consult with him/her, and my friends and family, to help me learn mathematics. | 3.22 | 0.63 | Most of the time |
| Shows kindness through polite language, positive tone, and approachable attitude | 3.49 | 0.60 | At all times |
| Provides and helps me with math activities that allow me to apply and reflect on what I have learned | 3.32 | 0.58 | All of the times |
| **Overall** | **3.21** | **0.44** | **Most of the time** |

**Legend: 3.26-4:00 – At all times/Very High 2.51-3.25 – Most of the time/High 1.76-2.50 – Sometimes/Low 1.00-1.75 – Never/Very Low**

Table 2 presents the distribution of respondents' factors affecting their performance in **General Mathematics considering Teacher-related** with an **overall mean** of 3.21 (SD=0.44) described as **Most of the time**. This means that Teacher-related factor is **high**. Further, it also means that the learners' performance affects their learning in terms of teacher factor most of the time. Teachers should exhibit a cheerful attitude in both their professional and personal lives. Being a teacher with a positive attitude gives a significant opportunity of influencing students for the betterment of their character or as individuals. It can

shape students' personalities.The development of student's academic abilities, as well as the development of their holistic qualities, is a goal of every teacher.

In accordance with Olubukola's (2018) study, teachers have a big impact on education. Communication, classroom management, pedagogical knowledge, and subject expertise are among teachers' professional attitudes considered in this study. However, future studies can look into additional professional behaviors that are expected of instructors but were not covered in this study. Future researchers can increase the study's sample size and gather information from respondents in the methodological section using different tools in addition to the questionnaire.

The indicator "***My teacher shows kindness through polite language, positive tone, and approachable attitude"*** got the **highest mean** of 3.49 (SD=0.60), described as **Most of the time**. This means that the Teacher-related factor on the said indicator is **high.** This implies that the teachers show a positive attitude in teaching mathematics in class. This kind of response from the students is a great impact on teachers in handling General Mathematics. And because they teach Mathematics with kindness, it enables the learnersto comprehend easier. This indicates that there is a good teacher-student relationship that is shaped duringthe Mathematics class. Building good relationships with learners can help build self-confidence. The studyof Levy (2018) posits that aside from having excellent teaching skills in Mathematics, teachers must learn to teach students to build confidence, encourage questioning and make space for curiosity, emphasize conceptual understanding over procedure, and provide authentic problems that increase students' drive to engage with Mathematics.

According to Nonyelum et al. (2022) teacher-student relationship has a significant impact on the academic performance of the students. When there is a connection between students and their teachers, this will empower students to communicate with their teachers without fear. A sense of school pride and cooperation among students is eventually fostered by supportive and encouraging connections. This means that the teacher-student relationship is essential in the development of the learning of the students, especially in Mathematics.

The indicator "***My teacher consistently sends calls and messages to check how I am doing in my learning activities in Mathematics"*** got the **lowest mean** of 2.98 (SD=0.63), described as **Most of the time**. This means that Teacher-related factor on the said indicator is **high.** It is the lowest mean in the ranking, but it conveys that the result is above average because the teachers monitor the students in Mathematics subject thru calls, text messages, or chats. The most used social media platform used by the teacher from the SHS department in monitoring the learning, as well as some of the feedback, is Facebook messenger and Google classroom. Teachers put extra effort into teaching their students. They used their weekends to reply to the concerns and questions of the learner.

Additionally, aside from injecting ideas into the students in classroom settings, teachers extend their desire to teach and guide their students outside the traditional classroom setting. Both students are provided with PHINMA Education email for the students as well as their teachers. The administration is providing educational tools that can be used by their faculty and students. The mode of teaching in PHINMA COC is flex learning. It is Blended learning that has four (4) days face- to -face and two (days) of distance learning. Somehow, the learners received feedbacking and monitoring through face-to-face interaction or in the classroom setting.

According to Selvaraj, et al. (2021) that both the group of students and the group of professors were overwhelmingly in favor of regular classes. The majority said that regular classes offered the best efficiency, interaction, and comprehension. Although learning and teaching from home can be somewhat more comfortable, both students and teachers find the process to be draining due to a variety of technicaldifficulties and the added effort required. Although traditional learning received the majority of the

responses, it can be assumed that this was due to teachers' and students' lack of preparedness for this kind of setup. If the government and administrators of educational institutions take the appropriate action, online education has the potential to rule the educational field.

**Table 3 Distribution of Respondents' Factors Affecting their Performance in General Mathematics considering Family-related**

| FAMILY-FACTORS | Mean | SD | Description |
|---|---|---|---|
| Asks me how well I am doing at school. | 3.16 | 0.73 | Most of the time |
| Spend time talking to me at home. | 2.92 | 0.74 | Most of the time |
| Help me with my Mathematical activities in home. | 2.60 | 0.86 | Most of the time |
| They supportive of my efforts at school and my achievements. | 3.25 | 0.65 | Most of the time |
| Supports me when I'm facing difficulties at school. | 3.13 | 0.73 | Most of the time |
| Encourages me to be confident. | 3.24 | 0.77 | Most of the time |
| Eats with me around a table. | 3.17 | 0.76 | Most of the time |
| Supports me to acquire school materials (books, uniform, calculator, laptop etc.,). | 3.34 | 0.68 | At all times |
| Asks to share my struggles in school. | 2.86 | 0.83 | Most of the time |
| Can financially support my education until I finish Grade 12. | 3.30 | 0.68 | At all times |
| **Overall** | **3.10** | **0.50** | **Most of the time** |

**Legend: 3.26-4:00 – At all times/Very High 2.51-3.25 – Most of the times/High 1.76-2.50 – Sometimes/Low 1.00-1.75 – Never/Very Low**

Table 3 discloses the distribution of respondents' factors affecting their performance in **General Mathematics considering Family-related** with an **overall mean** of 3.10 (SD=0.50) described as **Most of the time**. It means that the respondents' performance affecting their learning is high, in terms of the Family related factor. Respondents are dependent on their parent's financial support. They rely upon their parents' efforts to sustain their educational needs. They are lucky to have parents to maintain their needs. Even though, parents rarely help their children do their Mathematics activities. Somehow, they manage to asktheir children about how school is going on. That matters for the respondents to see their parent's involvement in their academic life.

The indicator "***My family supports me to acquire school materials (books, uniform, calculator, laptop, etc.)"*** got the **highest mean** of 3.34 (SD=0.68), described as **At all Times**. This means that Family-related factor on the said indicator is **Very High.** It indicates that the families of the Senior High School students support their students all the time. It is thrilled to identify that most of the families of these students are supportive in providing the need and care of their children in terms of education. The school accommodates students mostly under Classes C, D, and E. These are the students who are the product of public schools, rural areas, or recipients of the Pantawid Pamilyang Pilipino Program.

According to Moneva (2020), having a high parental financial support affects the students' motivation to learn. According to the findings, parents financially assist their children in school. They must give their children the supplies they require for school, especially for projects. However, senior high school learners occasionally showed parental support for academic goals. Additionally, students continually push themselves to learn since they are worried about falling behind and failing. Therefore, if their parents encourage them in their academics, they are more motivated to learn.

Contrarily, the indicator "***My family help me with my Mathematical activities in home"*** got the **lowest mean** of 2.60 (SD=0.86), described as **Sometimes**. This means that the Family-related factor on the said indicatoris **low.** This implies that their families could show their academic support by providing school materials, gadgets, books, uniforms, etc. However, helping the students by guiding their answers in modules inMathematics is vague. Most of the students parents are working very hard to provide financial support in getting their children to school. Possibly, these parents do not have the time to help their children work out their Mathematical activities in preference of working to find money to sustain school expenses. Learners also need emotional support and checking about their activities in school; regardless, parents do not know how to solve Mathematical activities, yet parents need to look into their children's school works.

As specified by Khan (2019), family interactions are crucial and regular at home. The study found it to be significantly correlated with students' academic progress. The interactions of family members at home are a tremendous source of growth for children. It serves as a resource for their social and intellectual growth. Additionally, it raises children's self-confidence. Therefore, it is advised that students be exposed to family dynamics; they should be allowed to express their opinions on various family issues.

**Table 4 Summary of the factors affecting learners' performance in General Mathematics**

| Factors affecting learners' performance | Mean | SD | Description |
|---|---|---|---|
| Learner-related | 3.01 | 0.35 | Most of the time |
| Teacher-related | 3.21 | 0.44 | Most of the time |
| Family-related | 3.10 | 0.50 | Most of the time |

**Legend: 3.26 – 4.00 – At All Times/Very High 2.51 – 3.25 – Most of the Time/High 1.76 – 2.50 – Sometimes/Low 1.00 – 1.75 – Never/Very Low**

Table 4 reveals the summary of the distribution respondents of factors affecting learners' performance in General Mathematics got the **highest mean** of 3.21 (SD=0.44), described as **Most of the time**. This means that learners generally agree that their teachers' performance for teaching affects their learning is high. Teachers showed good qualities towards General Mathematics classes.

The indicator that obtained the **highest mean** is "**My teacher exhibits kindness through polite language, positive tone, and approachable attitude."** Most of the students like this feature as their General Mathematics teacher. This suggests that kindness exists during classes. The approachable attitude of the teachers grabbed the students' hearts. A teacher's potential to influence students' character is considerably enhanced by a positive attitude.

Contrarily, it also revealed that got a **lowest mean** of 3.01 (SD=0.35), described as **Most of the time** is the **Learner-related.** This is the fact that the learner-related component is high. It is the lowest mean, but it suggests that students are putting up all of their efforts into learning General Mathematics, which resulted in an above-average performance. The majority of students show that they are working hard to master General Mathematics. It may be difficult, but they attempt to improve their knowledge of the subject.

In support of Moneva et al. (2020) study, that self-confidence is one of the essential qualities that every student should possess because it helps them lessen their difficulty in Mathematics. It implies that these students must have a positive attitude toward Mathematics.

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**Problem 2: What is the level of learners' performance in General Mathematics?**

**Table 5 Distribution of First Quarter learners' performance in General Mathematics**

| FIRST QUARTER GRADES | | | | |
|---|---|---|---|---|
| **Range** | **Frequency** | **MEAN** | **SD** | **Description** |
| 90-100 | 79 | 93 | 2 | Outstanding |
| 85-89 | 148 | 87 | 1 | Very Satisfactory |
| 80-84 | 312 | 82 | 1 | Satisfactory |
| 75-79 | 274 | 77 | 2 | Fairly Satisfactory |
| Below 75 | 118 | 73 | 2 | Did not meet Expectation |
| **Total** | **931** | **82** | **5** | **Satisfactory** |

**Legend: 90-100 Outstanding 85-89 Very Satisfactory 80-84 Satisfactory 75-79 Fairly Satisfactory Below 75 Did not meet Expectation**

Table 5 reveals the range, frequency, mean, standard deviation, and description of General Mathematics learner-respondents according to their 1st Quarter performance. Based on the table, it shows that out of 931 learners, 79 learners are outstanding, 148 learners are very satisfactory, 312 learners are satisfactory, 274 learners are fairly satisfactory, and 118 learners did not meet expectations. In general, the overall weighted mean of General Mathematics 1st Quarter performance is 82, which is equivalent to Satisfactory, according to the data. Thus, this means that the performance of the learners in the First Quarter in General Mathematics is interpreted as High. The learner's performance level shows that they learn and perform well enough inside the classroom. Learners are not excellent in the subject area, but they are also not poor regarding learning in General Mathematics subject.

The **highest frequency** of the level of learners' 1st Quarter performance is from the range of 80-84, it got a frequency of 312, and the average mean of the range is 82. The result shows that the learners have a moderate performance level based on their knowledge and problem-solving skill in General Mathematics. The students have the necessary information regarding the subject. In addition, this further means that the learners understand each lesson's objectives; they have good study habits; teachers are good communicators; teachers teach with kindness; and families are supportive in terms of the needs of their children. This implies that the learners, teachers, and family factors can help the performance of the learners in improving the future of the students. The learners will learn better if all the factors work together.

Further, the student's academic performance is revealed as Satisfactory, indicating that the learners' study practices are generally on an equal level. Additionally, improving students' study practices is important for their academic performance in terms of study habits, reading ability, note-taking, and listening skills.

The range of learners' performance level got the lowest frequency from 90-100. It has a frequency of 79, and the average mean for the range is 93. This implies that 79 students out of 931 students got grades above 90, which means only 79 learners are outstanding. The result shows that the learners have a very high-performance level-based in General Mathematics. These are the students who listen attentively in class discussions, are prepared in class, have good study habits, and are willing to improve when got low when getting low scores or grades.

In agreement with the study of Odiri (2016) showed that good study habits enhance Mathematical performance. It was also revealed that pupils with good study habits do better than those with poor study habits. According to the data, poor Mathematics achievement is caused by a lack of excellent study habits.

**Table 6 Distribution of Second quarter learners' performance in General Mathematics**

| SECOND QUARTER GRADES | | | | |
|---|---|---|---|---|
| **Range** | **Frequency** | **MEAN** | **SD** | **Description** |
| 90-100 | 158 | 93 | 2 | Outstanding |
| 85-89 | 164 | 87 | 2 | Very Satisfactory |
| 80-84 | 243 | 82 | 2 | Satisfactory |
| 75-79 | 226 | 77 | 2 | Fairly Satisfactory |
| Below 75 | 140 | 72 | 2 | Did not meet Expectation |
| **Total** | **931** | **84** | **6** | **Satisfactory** |

**Legend: 90-100 Outstanding 85-89 Very Satisfactory 80-84 Satisfactory 75-79 Fairly Satisfactory Below 75 Did not meet Expectation**

Table 4 reveals the range, frequency, mean, standard deviation, and description of General Mathematics learner-respondents according to their 2nd Quarter performance. It shows that out of 931 learners, 158 learners are Outstanding, 164 learners are Very satisfactory, 243 learners are satisfactory, 226 learners are fairly satisfactory, and 140 learners did not meet expectations. In general, the overall weighted mean of General Mathematics learners' 2nd Quarter performance is 84, which is equivalent to Satisfactory. The results revealed that both quarters of average mean performance of 1st and 2nd Quarter described as Satisfactory. Both quarters are interpreted as moderate performance.

The **highest frequency** of the level of learners' performance is from the range of 80-84, it got a frequency of 243, and the average mean of that range is 82, interpreted as moderate performance in Second Quarter. The result revealed that the frequency of students achieved satisfactory decreased. Fortunately, the Table 6 shows that the frequency, where the Outstanding level got higher, but at the same time, the frequency of the level that students Did not meet the expectation also increased. In light of the learners' Second Quarter performance, the learners' performance was distributed all over.

The range of learners' 2nd Quarter performance level with the lowest frequency, that is below 75. It has a frequency of 140, and the average mean for that range is 72. This implies that 140 students out of 931 students got grades below 75 which means 140 learners did not meet the expectation. These are the students that encounter problems in school or outside school that affect their performance. SHS students whoreceived grades below 75 will be monitored thoroughly, and their parents or guardian will be contacted and monitored ahead of time.

Moreover, the learner with grades below 75 must improve and prepare for the next quarterly assessment. The teachers and head of the school must always conduct a deliberation of grades. Part of the deliberation is the discussion of the interventions and remediations for the students who got grades below 75. This way, the students have a second chance to learn from their mistakes and develop their character in how to do better for the next quarter's assessment. Also, teachers can also innovate teaching styles and how they grade their students effectively.

In accordance with Schinske and Tanner (2017) shown proof that accuracy-based grading may, in fact, undermine learning and demotivate students. Additionally, if students rarely read the comments that instructors leave on papers, the time-consuming procedure of marking papers and providing comments may be ineffective. If teachers used the time they spent grading differently, one wonders how much more learning may take place for the students.

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**Problem 3: Is there is a significant relationship between the factors affecting learners' performance and Average Grade in General Mathematics?**

**Table 7 Result of the test on Relationship between factors affecting learners' performance and learner performance in General Mathematics**

| **Learners Performance in General Mathematics** | **Learner-related**<br>**r-value**<br>**p-value** | **Teacher-related**<br>**r-value**<br>**p-value** | **Family-related**<br>**r-value**<br>**p-value** | **Overall**<br>**r-value**<br>**p-value** |
|---|---|---|---|---|
| **First Quarter performance** | **0.097***<br>**0.003**<br>**S** | **0.193***<br>**<.001**<br>**S** | 0.006<br>0.850<br>NS | **0.203***<br>**<.001**<br>**S** |
| **Second Quarter performance** | **0.069***<br>**0.037**<br>**S** | **0.16***<br>**<.001**<br>**S** | 0.007<br>0.826<br>NS | **0.169***<br>**<.001**<br>**S** |

**S-Significant relationship NS-No significant Relationship r-Pearson Correlation**

***Correlation is significant at level.**

Table 7 provides the correlation results between the factors affecting learners' performance and learners' performance in both quarters in General Mathematics. The data revealed that the First Quarter performance has an r=0.203 and p=<.001, and for Second Quarter performance has an r=0.169 and p=<.001, which means both quarterly performances have a statistically significant positive correlation with the factorsaffecting learners' performance in General Mathematics . $(P < 0.05)$

The findings further revealed that the **null hypothesis is rejected** for both quarters of learners' performance. The finding shows that both learner and teacher-related factors affect both quarters in learners' performance in General Mathematics. Specifically, the Learner-related factor for First Quarter got an r=0.097 with p- value of 0.03, and for the Second Quarter is r=0.069 with p value of 0.037. The First Quarter got an r=0.193 with p-value of <.001, and the Second Quarter got an r=0.16 with the p value of <.001, implying that the correlation for both factors is not that strong, yet it concluded that there is a significant (positive) relationship between the learner-related factor and learners' performance in General Mathematics.

As regards to learner-related, it indicates that the learner attitudes regarding the subject affect the performance in General Mathematics for both quarters. This specifies that the factors affecting learners' performance have a significant relationship between how and what the learners' learning style in General Mathematics, how the learner studies their lesson, how attentively the learner listens to his/her teacher, how difficult working out mathematics problem alone, does associate and connect to overall learners' performance in General Mathematics.

Therefore, it is evident that any level of learner's performance affects the attitudes of the learners. There is a guarantee that students who prepare for their classes and pay close attention during the class discussion will

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obtain more than enough performance. Students in PHINMA COC are diverse in terms of their attitudes toward handling General Mathematics subject. Their performance will rely on how they respond to handling the subject based on their attitudes or factors that students express in a particular class.

In accordance with the study of Mazana (2019), their findings reveal that while students' attitudes about mathematics were initially favorable, they subsequently became less favorable from secondary schools through college. Their research shows that Second Quarter students had positive attitudes while secondary students' mean scores fell below the scale's midpoint. Their study states that in middle school, learners have positive attitudes toward Mathematics that reflect almost identical to the level of their performance.

Similarly, based on the result of Table 7 provides the correlation results between the teacher factors and their performance in General Mathematics. The results revealed that the **null hypothesis is rejected.** This implies that teacher factors have a significant relationship with the learners' performance in General Mathematics. This means that the teacher's qualities or performance directly affect the learner's performance in General Mathematics. The performance of the learners associates with the teacher's attitude. The teacher demonstrates compassion by using courteous language, a cheerful tone, and an accessible demeanor, which received the highest mean for the qualities of a teacher, which helps the learner's performance in General Mathematics for both quarters. Students receive a high-quality education, and they overwhelmingly agree that the Mathematics teachers in the SHS Department are kind in teaching their students, clear with their instructions, and helpful with Math activities.

In agreement with the study of Olubukola (2018) that the success of secondary education in Nigeria is significantly influenced by teachers. The study's main topic was one of the secondary school teacher's expected professional attitudes. This study's proficient attitudes of teachers include communication, classroom organization, pedagogical content knowledge, and subject expertise. It is commonly believed that quality teachers have a substantial effect on learners' academic success.

Table 7 results of the correlation between the Family-related factor and learners' performance for the First and Second Quarters in General Mathematics, reveals that there is no statistically significant relationship between the two variables. The results designate that the family-related factor for the First and Second Quarters has an $r=0.006$ with $p=0.850$ and $r=0.007$ with $p=0.826$, respectively. It specifies that there is no association between the family-factor and learners' performance in General Mathematics for both quarters ($P<0.05$).

This point to the support of the family doesn't directly affect the learners' performance in General Mathematics. Regardless that learners firmly acknowledge the statement that their family supports them financially, as reported in the result from Table 3, though it does not affect the performance of the learners in General Mathematics. Learners with parents who understand their children's educational needs must inspire them to work hard in class and do well. More than that, in the same indicated table, learnersrecognize that their family does not help them with their Mathematical activities and does not ask abouttheir struggles. Though, it is the parent's duty to make involvement and interact with their children. Still, learners must try their best to avoid distractions in their school performance.

According to the study by Shahzad (2020) that students who receive more parental monitoring and support from their parents perform better in their academic pursuits than students who receive less family assistance. And also, in agreement with the study of Moneva (2020), it indicates that having a high level of parental financial support affects the students' motivation to learn. Therefore, parents' financial support and emotional support can motivate students. But then again, Family-related factors do not have a significant relationship with the learners' performance for both quarters in General Mathematics.

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# SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains the summary, findings, conclusion, and recommendations on the factors affecting the learners' performance in General Mathematics in PHINMA COC.

## Summary

This study aimed to determine the factors that affect learners' performance and learners' performance in General Mathematics for the First and Second Quarters at PHINMA Cagayan de Oro College. Specifically, this study attempted to determine: 1.) the factors affecting learners' performance in General Mathematics, 2.) the level of learners' performance in General Mathematics, and 3.) the significant relationship between factors affecting learners' performance and learners' performance in General Mathematics. This study made use of a descriptive research design, particularly the descriptive correlational method.

The questionnaire was adopted from TIMSS (2007), PHINMAED teacher's survey, and PANORAMAED (2015). The respondents of the study were the nine hundred thirty-one (931) Grade 11 Students of PHINMA-Cagayan de Oro College, School Year 2022-2023, who took General Mathematics subject. The statistical tool used were frequency, mean, and standard deviation for Problems 1 and 2 and Pearson Product Moment Correlation Coefficient r for Problem 3.

## Findings

The following are the significant findings as revealed in the study after all data had been treated by appropriate statistical tools:

1. Among three (3) factors, the Teacher-related factor is the highest factor in terms of affecting learners' performance in General Mathematics.
2. The majority of respondents obtained a satisfactory performance in the First and Second Quarters.
3. There is a significant relationship between the factors affecting learners' performance and learners' performance in General Mathematics for both quarters.

## Conclusions

Based on the findings of the study, the following conclusions were drawn:

The learners recognized that their teachers displayed affection in discussing the topics in General Mathematics. In a way, the teachers demonstrate positive attitudes, such as showing kindness in polite language and tone in giving instruction or discussing the subject. This encourages students to consult withthe teachers if there are concerns or questions about the subject. Learners firmly acknowledge and preserve the kind of treatment they received from the SHS Department teachers.

In connection with the performance of the students obtained from their teachers in General Mathematics, they got a moderate performance. They did enough learning on the subject. Additionally, the learner and teacher-related factors affect the student's performance in General Mathematics, which can influence the respondents' learning. It could have a positive or negative effect on their performance in General Mathematics.

## Recommendations

Based on the above findings and conclusions, the researcher came up with the following recommendations;

1. The teachers must be kind when giving discussions or instructions, especially in General Mathematics. Give the students the impression that they feel free to ask questions and assist with their tasks.
2. The teachers should use instructional strategies and different kinds of tests to consider learners' differences or learning difficulties and reduce anxiety. With that, learners must also improve and modify their study habits to guarantee successful performance in the subject.
3. Teachers should innovate their teaching and learning methods because teacher-related factors influence how well students succeed.

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# APPENDIX A

**Letter of Request to Conduct the Study**

August 2022

PANHAY, CRESTAL

School Principal

Senior High School Department

PHINMA-Cagayan de Oro College

Ma'am:

I have the honor to request permission from your good office to conduct a research study on **"FACTORS AFFECTING THE LEARNERS'PERFORMANCE IN GENERAL MATHEMATICS IN PHINMA-COC."**

This study which uses adapted questionnaire will be in partial fulfillment of the requirements for the degree of Master of Arts in Secondary Education at PHINMA-Cagayan de Oro College.

Anticipating your favorable action on this regard.

Respectfully yours,

**MARY JANE M GUNDAYA, LPT**

Researcher

Noted by:

**BRAZIEL L. ONGCACHUY, PhD**

Dean

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# APPENDIX B

**Letter and Questionnaire to Respondents**

Dear Respondents:

I am a researcher of the study entitled **"FACTORS AFFECTING LEARNERS' PERFORMANCE IN GENERAL MATHEMATICS AT PHINMA COC".** May I request to kindly answer the questionnaires in this survey questionnaire sincerely.

The information you provide will enable me to attain the purpose of

the study. Thank you for your cooperation.Respectfully yours,

**Mary Jane Gundaya, LPT**

The Researcher

_____

**Name (Optional): _____**

**Directions:** Please answer the following questions. Put a check [?] mark on the column provided of your answer.

**Scale:** ***4****– At All times,* ***3****– Most of the time,* ***2****– Sometimes and* ***1****-Never*

**Learners-related factor**

| **Indicators** | 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| *1. I make myself prepared for the General Mathematics subject.* | | | | |
| *2. I listen attentively to the lecture of my Mathematics teacher.* | | | | |
| *3. I actively participate in the discussion, answering exercises and/or clarifying things I did not understand.* | | | | |
| *4. I get frustrated when the discussion is interrupted or the teacher is absent.* | | | | |
| *5. I usually do well in General Mathematics.* | | | | |
| *6. I learn things quickly in mathematics* | | | | |
| *7. Mathematics is harder for me than any other subject* | | | | |
| *8. I am good at working out difficult mathematics problems* | | | | |
| *9. I exert more effort when I do difficult assignments.* | | | | |
| *10. I spend my vacant time in doing assignments or studying my lessons.* | | | | |
| *11. I study the lessons I missed if I was absent from the class.* | | | | |
| *12. I study and prepared for quizzes and tests.* | | | | |
| *13. I study harder to improve my performance when I get low grades.* | | | | |
| *14. I spend less time with my friends during school days to concentrate more on my studies.* | | | | |
| *15. I answer mathematical problems in team or small group.* | | | | |

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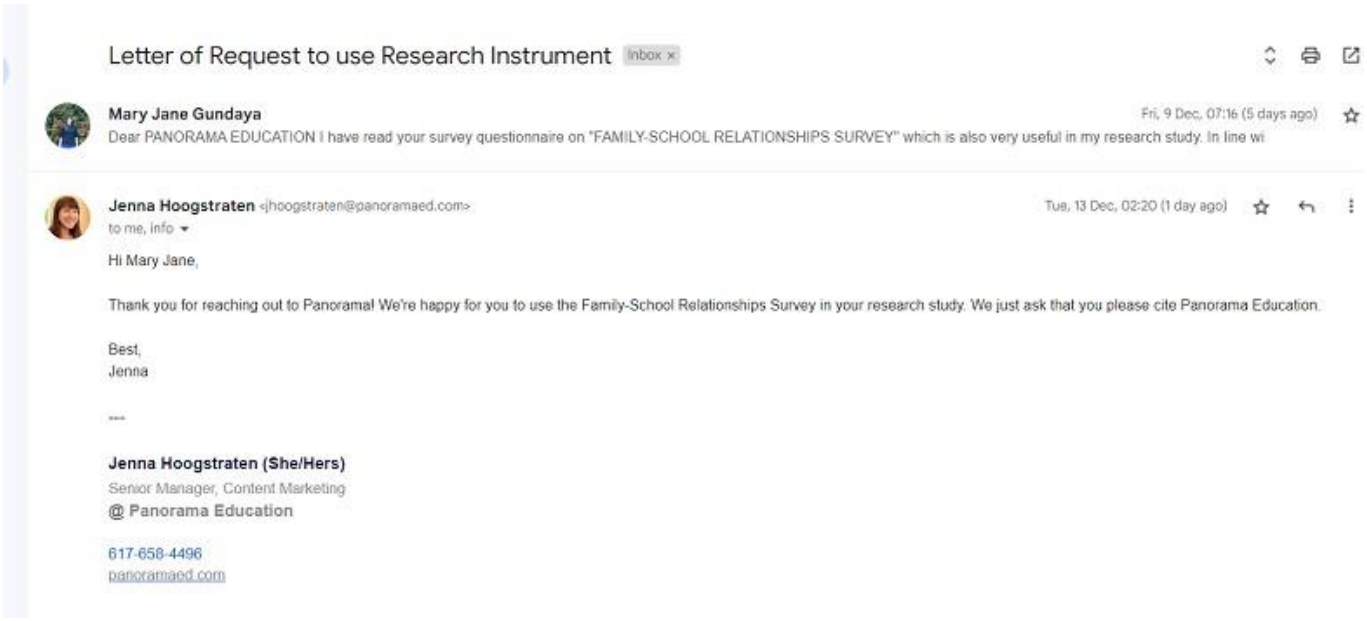
| ***Teacher-related factor*** | | | | |
|---|---|---|---|---|
| **Indicators**<br>*My General Mathematics teacher…* | 4 | 3 | 2 | 1 |
| *1. consistently sends calls and messages to check how I am doing in my learning activities in mathematics* | | | | |
| *1. gives clear instructions about the things I need to do for my mathematics module* | | | | |
| *2. answers well my questions about math lessons in the modules through calls or texts* | | | | |
| *3. provides feedback about my work, so that I know what it is that I did right and how else I can improve* | | | | |
| *4. encourages me to consult with him/her, and my friends and family, to help me learn mathematics* | | | | |
| *5. shows kindness through polite language, positive tone, and approachable attitude* | | | | |
| *6. provides and helps me with math activities that allow me to apply and reflect on what I have learned* | | | | |
| ***Family-related Factor*** | | | | |
| **Indicators**<br>*My Parents/guardian…* | 4 | 3 | 2 | 1 |
| *1. asks me how well I am doing at school.* | | | | |
| *2. spend time talking to me at home.* | | | | |
| *3. help me with my Mathematical activities in home.* | | | | |
| ***4.*** *is supportive of my efforts at school and my achievements.* | | | | |
| *5. supports me when I'm facing difficulties at school.* | | | | |
| *6. encourages me to be confident.* | | | | |
| *7. eats with me around a table.* | | | | |
| *8. supports me to acquire school materials (books, uniform, calculator, laptop etc.,).* | | | | |
| *9. asks to share my struggles in school.* | | | | |
| *10. can financially support my education until I finish Grade 12.* | | | | |

# APPENDIX C

## Letter of Request to use Research Instrument (PANORAMA, 2015)

## PANORAMA EDUCATION



Letter of Request to use Research Instrument Inbox ×

**Mary Jane Gundaya** Fri, 9 Dec, 07:16 (5 days ago)
Dear PANORAMA EDUCATION I have read your survey questionnaire on "FAMILY-SCHOOL RELATIONSHIPS SURVEY" which is also very useful in my research study. In line wi

**Jenna Hoogstraten** <jhoogstraten@panoramaed.com> Tue, 13 Dec, 02:20 (1 day ago)
to me, info

Hi Mary Jane,

Thank you for reaching out to Panorama! We're happy for you to use the Family-School Relationships Survey in your research study. We just ask that you please cite Panorama Education.

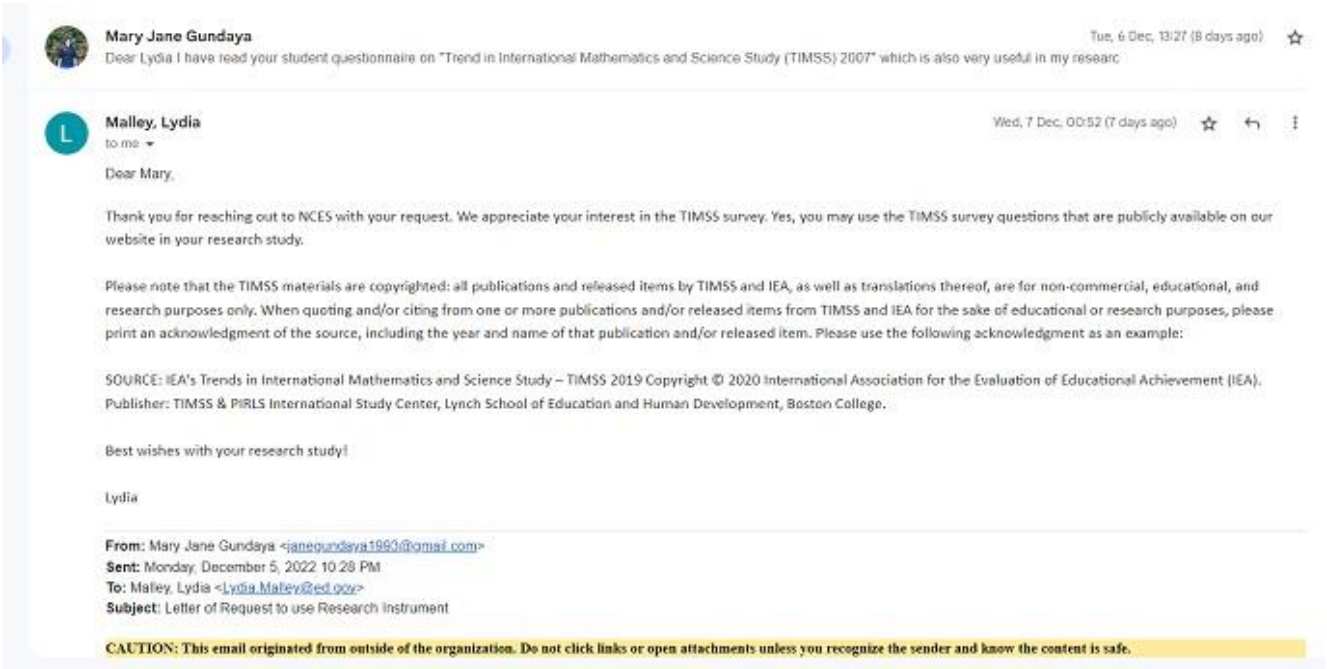
Best,
Jenna

---

**Jenna Hoogstraten (She/Hers)**
Senior Manager, Content Marketing
@ Panorama Education

617-658-4496
panoramaed.com

## TRENDS OF INTERNATIONAL MATEMATICS AND SCIENCE STUDY (TIMSS



**Mary Jane Gundaya** Tue, 6 Dec, 13:27 (8 days ago)
Dear Lydia I have read your student questionnaire on "Trend in International Mathematics and Science Study (TIMSS) 2007" which is also very useful in my researc

**Malley, Lydia** Wed, 7 Dec, 00:52 (7 days ago)
to me

Dear Mary,

Thank you for reaching out to NCES with your request. We appreciate your interest in the TIMSS survey. Yes, you may use the TIMSS survey questions that are publicly available on our website in your research study.

Please note that the TIMSS materials are copyrighted: all publications and released items by TIMSS and IEA, as well as translations thereof, are for non-commercial, educational, and research purposes only. When quoting and/or citing from one or more publications and/or released items from TIMSS and IEA for the sake of educational or research purposes, please print an acknowledgment of the source, including the year and name of that publication and/or released item. Please use the following acknowledgment as an example:

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2019 Copyright © 2020 International Association for the Evaluation of Educational Achievement (IEA). Publisher: TIMSS & PIRLS International Study Center, Lynch School of Education and Human Development, Boston College.

Best wishes with your research study!

Lydia

**From:** Mary Jane Gundaya <janegundaya1993@gmail.com>
**Sent:** Monday, December 5, 2022 10:28 PM
**To:** Malley, Lydia <Lydia.Malley@ed.gov>
**Subject:** Letter of Request to use Research Instrument

**CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

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# APPENDIX D

**Certificate of Editing, and Proofreading**

This is to certify that the thesis manuscript of **MARY JANE M. GUNDAYA, LPT**, a Master of Arts in Secondary Education graduate student of PHINMA-Cagayan de Oro College on his thesis entitled **"FACTORS AFFECTING LEARNERS' PERFORMANCE IN GENERAL MATHEMATICS IN PHINMA COC"** has been reviewed, proofread and edited by the undersign in accordance with the proper use of English language, grammar, punctuation, spelling and overall style. Further, the undersigned ensures that the researcher's intended meaning was not altered during the review.

This certification is issued and signed on the 16th day of November 2022 at PHINMA-Cagayan de Oro College, Max Suniel, Carmen, Cagayan de Oro City.

**ERLINDA A. QUIRAP, PhD**

Grammarian/English Teacher

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# APPENDIX E

**Data Analysis Certificate**

This is to certify that data provided by **MARY JANE M. GUNDAYA, LPT**, a Master of Arts in Secondary Education graduate student of PHINMA-Cagayan de Oro College on his thesis entitled **" PUBLIC SPEAKING ANXIETY IN ORAL COMMUNICATION AMONG GRADE 11 STUDENTS OF PHINMA-COC"** was processed and analyzed by the undersigned statistician.

Given this 16th day of November 2022 at PHINMA-Cagayan de Oro College, Max Suniel, Carmen, Cagayan de Oro City.

**LARRY JOHN SUMALPONG, LPT**

Probability and Statistics Instructor

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# CURRICULUM VITAE

## PERSONAL INFORMATION

Name: Mary Jane M. Gundaya

Address : Fatima Subd., Pagatpat CDO

Age : 29

Sex : Female

Date of Birth : June 20, 1993

Place of Birth : Cagayan de Oro City

Civil Status : Married

Nationality : Filipino

Religion : Roman Catholic

Contact Number : 09177727741

Email Address : janegundaya1993@gmail.com

## EDUCATIONAL BACKGROUND

Graduate**:** Master of Arts in Secondary Education

PHINMA-Cagayan de Oro College

Carmen, Cagayan de Oro City

April 2023

Corrales Avenue, Cagayan de Oro
March 2014

High School: Misamis Oriental General
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Don Apolinario Velez Street
Cagayan de Oro City

March 2009

Elementary : City Central School
Don Apolinario Velez Street
Cagayan de Oro City

March 2009

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**RELATED WORK EXPERIENCE**

2017 – present : PHINMA-Cagayan de Oro College

Suniel Street Carmen, CDO

SHS Instructor II

2014 – 2017 : PHINMA-Cagayan de Oro College
Max Suniel Street Carmen, CDO

College Instructor

Eligibility : Professional Teacher Board Passer
License no. 1658850

Awarded by Professional Regulatory Commission (PRC)
June 2018

**AFFILIATIONS**

**Cagayan de Oro College- PHINMATRAININGS AND SEMINARS ATTENDED**

Vibal Group : VSmart Courseware Support March 8, 2019

Vibal Group: Innovative Programs to Improve Teachers' Competencies In Planning, Implementing, And Assessing Instruction October 26, 2018

COC College-PHINMA: National Service Training Program (NSTP) Seminar 2015-2016
COC College-PHINMA: Faculty Coaching Program 2015-2016

ASMAC Philippines : International Conference on Education SEAMAO, RECSAM for Sustainable Development in the DepEd, CHED Context of K-12 Curriculum October 22-24, 2015