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Correlation of Academic Roots and Educational Success (CARES) of Education Program Students in Mathematics in the Modern World (Math 01)

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ABSTRACT

Mathematics in the Modern World (MATH 01) is a core subject in college that many students find challenging, and its mastery is often influenced by prior academic preparation and students' attitudes toward learning. This study examined the relationship between Senior High School (SHS) academic background, students' attitudes toward mathematics, and their performance in MATH 01. Specifically, it investigated how SHS track, General Weighted Average (GWA), and attitude toward mathematics relate to students' final grades in the course. Using a descriptive-correlational design, data were collected from fifty (50) college students through a questionnaire and academic records. Descriptive statistics and Pearson correlation were employed for analysis. Findings revealed that most respondents came from the HUMSS and TVL tracks and had outstanding SHS academic performance, as reflected in their GWA. In terms of MATH 01 grades, most students achieved Very Satisfactory to Outstanding results. Respondents generally exhibited positive attitudes toward learning mathematics, recognizing its practical value, cognitive benefits, and relevance in daily life. Statistical analysis indicated that SHS track and GWA were positively and significantly correlated with MATH 01 performance, suggesting that students' prior academic background influences their success in the course. However, the relationship between students' attitude toward mathematics and their MATH 01 grade was not statistically significant, indicating that a positive attitude alone does not necessarily translate into higher academic achievement. Based on these findings, it was concluded that SHS academic background plays a more substantial role in students' performance in MATH 01 than their attitude toward the subject.

INTRODUCTION

The K–12 curriculum was added in the Philippines to help improve the quality of education and preparing students more effectively for higher learning. With the extra two years in Senior High School (SHS), the program also aimed to match the country's education system with the global standards. These added years give students more time to learn important lessons, build useful skills, and think about what course or job they want to take in the future. In this context, mathematics continues to be an important subject that helps students develop critical thinking and problem-solving skills. One of the core math subjects in the first year of college is Mathematics in the Modern World (MATH 0), which is a foundational course that covers key topics in algebra and introduces students to mathematical reasoning. This course provides a strong foundation for studying more advanced math and is important for many college programs.

In this study, the term academic roots refers to the academic background of students, specifically from Senior High School. Their SHS General Weighted Average or GWA plus the track that they pursued are included. Since students bring cognitive preparation as well as overall academic performance with them upon entering college, these said two factors reflect it. The varying levels of exposure to mathematics in different strands may influence how well students transition into college math courses. On the other hand, this research considers students' actual performance and disposition within their college mathematics course. This constitutes educational success for Mathematics in the Modern World (MATH 01). Their attitude towards learning affects engagement, persistence, and motivation plus their MATH 01 final grade represents academic achievement. Even with a fine education, a pupil may do badly when studying math. This poor performance may occur if their attitude toward the subject is negative or indifferent.

While several studies have examined the relationship between students' academic backgrounds and their mathematics performance, there remains a clear gap in research that specifically investigates the combined influence of Senior High School (SHS) strand and General Weighted Average (GWA) on students' achievement in foundational college mathematics courses such as MATH 01. Existing literature often focuses on either strand-based performance or curriculum-related outcomes. For instance, Cerbito (2020) compared the mathematics proficiency of SHS students across different strands and found significant variation in performance levels. Similarly, Guinocor *et al.* (2020) analyzed the mathematics performance of university students and noted that prior academic preparation contributes to college-level

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outcomes, though they did not examine SHS strand together with GWA.

Likewise, Rodrigo and Prudente (2024) found significant differences in the academic achievement of college students in Mathematics in the Modern World when grouped according to demographic variables, including their SHS strand, suggesting that students' previous academic preparation may influence their performance in college mathematics. Furthermore, Labo (2022) examined the performance of freshmen students in Mathematics in the Modern World and highlighted the need to understand the factors associated with students' achievement in this foundational mathematics course as they transition into higher education.

Despite these findings, no available research integrates multiple academic background factors — particularly SHS strand and GWA — to determine their combined effect on performance in introductory college mathematics courses, highlighting a clear gap that the present study aims to address.

This study aims to examine the correlation between the academic background of teacher education students in Senior High School (SHS) and their performance in Mathematics in the Modern World (MATH 01). Specifically, it seeks to:

1. What is the academic background of the student-respondents in Senior High School in terms of:
   • Track
   • General Weighted Average
2. What is the academic performance of the student-respondents in Mathematics in the Modern World (MATH 01), as measured by their final course grade?
3. What is the student's level of attitude towards learning Mathematics in the Modern World (MATH 01)?
4. Is there a significant relationship between the students' final grade in Mathematics in the Modern World (MATH 01) and the following:
   • SHS Track
   • SHS GWA
   • Attitudes toward learning MATH 01

LITERATURE REVIEW

Senior High School Academic Background

With the implementation of the K–12 curriculum in the Philippines, Senior High School (SHS) introduced specialized academic tracks—STEM, ABM, HUMSS, GAS, and TVL—to better prepare learners for their chosen college programs. These strands were designed to provide differentiated academic preparation based on students' future career pathways. Empirical evidence shows that SHS strand is strongly associated with students' mathematical readiness. Cerbito (2020), for example, found significant differences in mathematics proficiency among SHS strands, with STEM students demonstrating higher performance due to their stronger exposure to advanced mathematics and science subjects.

Another important indicator of student preparedness is the General Weighted Average (GWA) earned in SHS. Manugas *et al.* (2022) found that SHS academic performance, as reflected in the GWA, is significantly associated with college academic outcomes, suggesting that stronger high school performance contributes to better adaptation to tertiary coursework. However, Perez (2024) argued that while SHS strand influences students' readiness for college, GWA alone may not accurately predict subject-specific performance such as mathematics, indicating that the alignment of the SHS curriculum with students' college program is also a crucial factor.

In addition, transition challenges persist when students pursue college programs that are misaligned with their SHS strand. Guinocor *et al.* (2020) reported that the quality and type of prior academic preparation influence students' mathematics performance at the tertiary level, implying that strand mismatch may contribute to academic difficulty in foundational courses like MATH 01. This reinforces the need to examine SHS strand and GWA as interconnected factors affecting students' performance in introductory college mathematics.

Attitude Toward Mathematics in the Modern World (MATH 01)

Affective factors, such as students' attitudes toward mathematics, play a critical role in shaping academic performance, yet they are often overlooked in discussions of learning outcomes. Research shows that dimensions such as confidence, value, enjoyment, motivation, and anxiety influence how learners engage with mathematical tasks and persist through challenges. Tapia and Marsh (2024) found that students with positive attitudes toward mathematics are more likely to demonstrate higher engagement and improved academic achievement .

In the Philippine context, several studies emphasize the significance of attitudes in mathematics learning. Capuno, *et al.* (2019) found that junior high school students' attitudes and study habits were strongly associated with their mathematics performance, indicating that affective readiness complements cognitive preparation. Similarly, Subia *et al.* (2023) reported a significant positive correlation between attitudes and performance in Mathematics I among first-year college students, highlighting the continuing influence of affective factors in foundational college mathematics.

Other recent studies reinforce the importance of classroom environment and engagement in shaping attitudes toward mathematics. Umac *et al.* (2025) observed that interest, confidence, and perceived usefulness strongly correlated with performance, while Caputol and Orbeta (2025) found that mathematical satisfaction and positive attitudes predicted student engagement in mathematics. These findings demonstrate that both internal dispositions and instructional experiences contribute to students' affective readiness in mathematics.

Recent evidence also highlights the importance of students' perceptions of the value of Mathematics in the Modern World in shaping their attitudes toward learning. Edu *et al.* (2025) found that first-year college students

perceived MATH 01 as valuable because it enhances critical thinking, supports everyday decision-making, and promotes technological and real-world applications of mathematics. The study further emphasized that both internal experiences, such as personal interest and motivation, and external influences, including classroom experiences, shape students' appreciation of the course. These findings suggest that recognizing the practical relevance of mathematics fosters more positive attitudes and encourages greater engagement in learning

Taken together, the literature suggests that attitudes toward mathematics provide an essential lens for understanding performance in foundational courses such as MATH 01. Alongside academic background, attitudes reflect students' motivation, confidence, and emotional responses, which directly influence their engagement, persistence, and overall success in mathematical learning.

Academic Performance in Mathematics in the Modern World (MATH 01)

Mathematics in the Modern World (MATH 01) is a core subject in the Philippine General Education curriculum, introduced under CHED Memorandum Order No. 20, s. 2013. The course aims to develop mathematical literacy, critical thinking, and real-life problem-solving skills applicable across disciplines. Despite its foundational role, many first-year students perceive MATH 01 as challenging due to gaps in prior knowledge, conceptual demands, and the transition from procedural high school mathematics to college-level reasoning.

Research indicates that both academic preparation and affective factors influence performance in foundational mathematics courses. Guinocor *et al.* (2020) found that students' performance in introductory college mathematics was shaped by prior knowledge, SHS strand, and general academic readiness. Positive prior preparation allowed students to engage more effectively with problem-solving tasks, while deficiencies contributed to difficulties in learning new concepts.

In addition to academic preparation, affective and motivational factors have also been identified as significant contributors to mathematics achievement. Recent research has also identified several determinants of achievement in Mathematics in the Modern World. Endocal and Baraquia (2025) found that students' attitudes, computation skills, comprehension skills, and logical reasoning significantly predicted achievement in MATH 01, whereas self-efficacy, although positively correlated with achievement, was not a significant predictor in the regression model. Their findings emphasize that success in MATH 01 is influenced by both cognitive competencies and affective characteristics, reinforcing the importance of strengthening students' mathematical foundations alongside positive learning attitudes. Likewise, Subia *et al.* (2023) reported that first-year college students' attitudes toward mathematics significantly correlated with performance in foundational mathematics courses. Similarly, Capuno, *et al.*(2019) emphasized that study habits, motivation, and attitude strongly affect mathematics achievement in junior high and early college levels, highlighting the importance of both cognitive and affective preparedness for success in MATH 01.

Given its function as a bridge between high school mathematics and college-level critical thinking, MATH 01 serves as an important indicator of students' overall educational readiness. Understanding the academic and affective factors that contribute to performance in this subject is essential for improving curriculum design, instructional strategies, and student support systems.

MATERIALS AND METHODS

Research Design

This study will employ a descriptive-correlational research design. This approach is appropriate for determining and describing the relationships between students' academic background in Senior High School—specifically their strand and General Weighted Average (GWA), and their academic performance and attitudes toward learning Mathematics in the Modern World (MATH 01).

The descriptive component will involve summarizing and interpreting the profile of student-respondents, including their SHS strand, GWA, academic performance in MATH 01, and their attitudes toward learning mathematics. The correlational component will examine the degree and direction of the relationships between these variables, particularly whether SHS academic background and attitudes significantly correlate with students' final course grade in MATH 01.

Research Instrument

This study primarily relies on a survey questionnaire composed of two parts. The first part collects data on the students' Senior High School (SHS) academic background, including their SHS strand and General Weighted Average (GWA). It also gathers their academic performance in Mathematics in the Modern World (MATH 01), as indicated by their final course grade.

The second part of the questionnaire features a Likert-scale section that assesses the students' attitudes toward learning mathematics. It includes 30 items adapted from the Attitude Toward Mathematics Inventory (ATMI), the ATMI was originally developed by Tapia & Marsh (2004); the version used in this study was adapted and described in Universität Duisburg Essen (n.d.). The ATMI is a well-established tool that measures students' confidence, motivation, value placed on mathematics, and perceived enjoyment of the subject.

To address the risk of survey fatigue and bias due to the length of the 30-item Likert scale, the researcher ensure that the items were adapted from a validated instrument, balanced between positive and negative statements and presented in logical sequence. Furthermore, participants were given five (5) days to accomplish the survey at their convenience, allowing them to respond thoughtfully and avoid rushed or patterned answers.

Population and Sampling

The participants of the study consist of a total of fifty (50) first-year college students enrolled in MATH 01 during the academic year 2024-2025 at School of Arts, Sciences, and Education specifically the students at Education Program in Divine Word College of Laoag. A purposive sampling technique will be used, selecting only those students who had all the necessary academic background data. The target sample size was determined by the availability of eligible student records and ethical clearance protocols.

Data Collection Procedures

Ethical considerations were paramount, with strict adherence to guidelines to maintain confidentiality. This study will adhere to the ethical standards of the University Research Ethics Review Board (URERB):

Before the conduct of the study, the researcher will submit a letter of request to the President of the College. Afterwards, an ethical permission will be obtained from the University Research Ethics and Review Board (URERB) before the distribution of the questionnaire to the selected respondents. After the approval, the researcher will proceed in sending a letter of request to the dean of the department and advisers of the respondents, requesting the distribution of the consent and scheduled day of gathering the data.

After being allowed to conduct the study, the researcher will distribute the consents to the participants and retrieved their responses after two (2) days. After retrieving the data from the chosen participants, it will be consolidated the responses by picking those who agreed to participate in the study, as they have the right to withdraw. An orientation will be conducted with the confirmed respondents and informed the participants in regard with the nature of the study. During the orientation, participants will also be reminded that their participation is purely voluntary. They are assured that choosing not to participate, or withdrawing later, carries no academic consequences and does not affect their course grades, class standing or relationship with the College in any way. The respondents will be given five (5) days to answer the survey questionnaire at their most convenient time. This allows them to participate without interfering with their class schedules or other school-related activities. The researcher ensures that students have enough time to reflect and respond honestly, without feeling rushed or pressured.

After the questionnaires are collected, the responses are organized, analyzed, and interpreted using the most appropriate statistical tools for the study. The results are then used to develop conclusions and recommendations that align with the research objectives. All gathered data are treated with strict confidentiality. The information is used exclusively for this research and is not shared with anyone outside the study. To ensure ethical compliance, the data will be securely stored and will be deleted or destroyed one year after the study is completed.

Data Analysis Plan

This study will employ a descriptive-correlational method of data analysis. Descriptive statistics such as frequency, percentage, mean, and standard deviation will be used to describe the academic background of the student-respondents in terms of their Senior High School (SHS) strand and General Weighted Average (GWA), their academic performance in Mathematics in the Modern World (MATH 01), and their attitudes toward learning the subject. Meanwhile, Pearson's r Correlation will be used determine the relationship between these variables and students' academic performance in MATH 01. This statistical technique will identify the strength and direction of the relationships between SHS strand, GWA, and students' attitudes with their final grade in MATH 01.

To make the comparison of academic performance more consistent, the Senior High School (SHS) General Weighted Average (GWA) was transmuted to match the grading system used by Divine Word College of Laoag (DWCL). While both SHS and college grades use a 0–100 scale, they may differ in how they interpret or classify those scores. In this study, a standard transmutation was used to adjust the SHS grades so they would be comparable to college grades. This allowed for a more accurate and consistent analysis of the relationship between SHS academic background and the final grade in Math 01.

The students' attitude toward mathematics in the modern world were measured using an adapted version of the Attitudes Towards Mathematics Inventory (ATMI). The ATMI was originally developed by Tapia & Marsh (2004); the version used in this study was adapted and described in Universität Duisburg Essen (n.d.). This instrument assesses learners' affective dispositions toward mathematics, including confidence, value, enjoyment, and motivation.

The inventory employed a five-point Likert scale, with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). To interpret the mean scores, the study applied the equal-interval approach, dividing the scale into five equal categories of 0.80 each. This approach provides a practical method for summarizing ordinal Likert data while allowing descriptive interpretation of the results (Huh & Gim, 2025; Mircioiu & Atkinson, 2017). To interpret the grades of students, the grading scale, with its corresponding descriptors is based on the DepEd Order No. 8 s. 2015.

Table 1: Descriptive Interpretation of Mean Range (Attitude Toward Mathematics in the Modern World)

Mean Range	Interpretation
4.21 – 5.00	Very Positive
3.41 – 4.20	Positive

2.61 – 3.40	Neutral
1.81 – 2.60	Negative
1.00 – 1.80	Very Negative

Table 2: Descriptive Interpretation of Grades

Grading Scale	**Interpretation**
90 – 100	Outstanding
85 – 89	Very Satisfactory
80 – 84	Satisfactory
75 – 79	Fairly Satisfactory
70 and below	Poor/Failed

Table 3: Transmuted grading system used by Divine Word College of Laoag (DWCL)

DWCL Rating Grade	**Percentage**
1.0	95-100
1.1-1.2	94-93
1.3-1.5	92-90
1.6-1.8	89-87
1.9-2.2	86-83
2.3-2.7	82-78
2.8-2.9	77-76
3.0	75
5.0	74 and below
INC	Incomplete

Ethical Considerations

Prior to the administration of the research instruments, all participants are provided with a clear and comprehensive informed consent form. It includes the study's purpose, procedures, duration, voluntary nature of participation, and the right to refuse or withdraw from the study at any point without penalty. The researcher explains the contents of the form in simple language to ensure full understanding before securing the participant's signature. Only those who give voluntary and written consent are included in the study.

To uphold the privacy of the participants, the study strictly observes data confidentiality and anonymity. All personal identifiers are removed or coded, and data are stored securely with access limited to the researcher. Responses are used solely for academic purposes and reported in aggregate form to prevent identification of individuals. No names or identifying details appear in the final research output or publication.

There is no known physical, emotional, or psychological risks associated with answering the questionnaire. The questions are limited to academic background, course performance, and attitudes toward learning mathematics. In terms of benefits, participants may develop self-awareness regarding their academic experiences, and the findings may contribute to the improvement of teaching strategies and curriculum alignment in mathematics education. The researcher commits to handling all participant information with care and integrity throughout the study process.

No incentives or monetary compensation were provided to the participants of this study. Participation was entirely voluntary, and the absence of any form of reward ensured that students' decisions to join were not influenced by external motivators. This approach helped maintain the integrity of the data and minimized the risk of coercion or undue influence. By not offering incentives, the study emphasized the participants' free will and protected their autonomy, in accordance with ethical guidelines for research involving human subjects.

RESULTS AND DISCUSSION

Senior High School Background

This section discusses the Senior High School (SHS) background of the Education program students in terms of their SHS track and General Weighted Average (GWA). It presents the distribution of respondents according to the academic tracks or strands they completed in SHS, as well as their overall academic performance during that period.

Table 4: Senior High School Track of Students

SHS Track	Frequency (f)	Percentage (%)
ABM	11	22
Arts & Design	2	4
GAS	5	10
HUMSS	16	32
STEM	3	6
TVL	13	26
Total	**50**	**100**

Table 4 presents the distribution of the student-respondents according to their Senior High School (SHS) track. The data reveal that most of the respondents (16 or 32%) came from the Humanities and Social Sciences (HUMSS) strand. This is followed by 13 respondents (26%) from the Technical-Vocational-Livelihood (TVL) track and 11 respondents (22%) from the Accountancy, Business, and Management (ABM) strand. Meanwhile, 5 respondents (10%) came from the General Academic Strand (GAS), 3 respondents (6%) from the Science, Technology, Engineering, and Mathematics (STEM) strand, and only 2 respondents (4%) from the Arts and Design track.

These results indicate that most participants pursued the HUMSS and TVL tracks in Senior High School, suggesting that a significant portion of the respondents had academic orientations centered on social sciences, communication, and technical-vocational competencies prior to entering college. This distribution provides valuable insight into the diverse academic backgrounds of the students, which may influence their performance in Mathematics in the Modern World (MATH 01). The influence of SHS track on college performance is supported by studies such as Manugas, Pepito, Fernandez, and Canque (2022), who found that the strand taken in Senior High School significantly predicts college GPA, indicating that academic track can shape students' readiness for higher education courses. Additionally, Baucas (2024) reported a significant relationship between mathematics performance and students' preference for HUMSS, STEM, and TVL strands, emphasizing that prior academic orientation may meaningfully affect students' preparation and success in college mathematics courses.

Table 5: Senior High School General Weighted Average of Students

Grading scale	Frequency	Percentage	Interpretation
90-100	45	90.00	Outstanding
85-89	4	8.00	Very Satisfactory
80-84	1	2.00	Satisfactory
75-79	0	0.00	Fairly Satisfactory
70 and below	0	0.00	Poor/Fail
Mean	92.84	-	Outstanding
Standard Deviation	**3.11**		

Table 5 shows the academic background of the student-respondents in Senior High School in terms of their General Weighted Average (GWA). The data reveal that most of the respondents, 45 or 90%, obtained grades within the 90–100 range, which is described as Outstanding. Meanwhile, 4 respondents (8%) achieved grades between 85–89, classified as Very Satisfactory, and 1 respondent (2%) fell within the 80–84 range, described as Satisfactory. None of the respondents obtained grades below 80. The computed mean GWA is 92.48 with a standard deviation of 3.11, indicating that most students' grades are closely clustered around the mean, showing consistency in their academic performance. Based on these results, the overall academic performance of the respondents in Senior High School is interpreted as Outstanding. This suggests that the respondents generally performed at a high academic level during their SHS years.

Hodara and Lewis (2016) found that high school GPA significantly predicts students' performance in higher education, particularly in mathematics-related courses, as students with higher GPA often possess stronger study habits, discipline, and foundational knowledge. Similarly, Poulsen (2019) emphasized that students who achieve high academic results in high school are more likely to maintain high performance in college-level mathematics, highlighting the importance of consistent achievement prior to entering higher education.

Academic Performance on Mathematics in the Modern World (Math 01)

This section presents the academic performance of the Education program students in the course Mathematics in the Modern World (MATH 01) as measured by their final grades. The data provide an overview of how the respondents performed in this subject.

Table 6: Academic Performance in MATH 01

Grading scale	Frequency	Percentage	Interpretation
90-100	21	4.00	Outstanding
85-89	28	56.00	Very Satisfactory
80-84	1	2.00	Satisfactory
75-79	0	0.00	Fairly Satisfactory
70 and below	0	0.00	Poor/Fail
Mean	89.08	-	Very Satisfactory
Standard Deviation	**2.10**		

Table 6 presents the academic performance of the student-respondents in Mathematics in the Modern World (MATH 01) based on their final course grades. The results reveal that most of the respondents, 28 or 56%, obtained grades within the 85–89 range, which is described as Very Satisfactory. Meanwhile, 21 respondents (42%) achieved grades between 90–100, interpreted as Outstanding, and 1 respondent (2%) obtained a grade within the 80–84 range, which is Satisfactory. None of the respondents received grades below 80.

The computed mean grade of 89.08 and standard deviation of 2.10 indicate that most students performed consistently well, with minimal variation in their scores. This suggests that the respondents generally demonstrated a high level of academic achievement in Mathematics in the Modern World. Hence, the overall performance of the respondents is described as Very Satisfactory, implying that the students possess a strong understanding of the course concepts and skills required in MATH 01. Poulsen (2019) emphasized that high-achieving students in high school mathematics are more likely to maintain consistent performance in college-level mathematics, highlighting the importance of foundational knowledge and study habits. This suggests that the respondents' performance in MATH 01 reflects both their prior preparation and their ability to apply mathematical concepts effectively in higher education.

Level of Attitude Toward Learning Math 01

This section presents the level of attitude of the Education program students toward learning Mathematics in the Modern World (MATH 01). The data reflect how the respondents perceive, feel, and respond to learning mathematics as a subject in their college curriculum.

Table 7: Level of Attitude Toward Learning Mathematics in the Modern World (MATH 01)

Statement	Mean	Interpretation
1. Mathematics is a very worthwhile and necessary subject.	4.26	Very positive
2. I want to develop my mathematical skills.	4.52	Very positive
3. I get a great deal of satisfaction out of solving a mathematics problem.	3.78	Positive
4. Mathematics helps develop the mind and teaches a person to think.	4.34	Very positive
5. Mathematics is important in everyday life.	4.58	Very positive
6. Mathematics is one of the most important subjects for people to study.	4.10	Positive
7. High school math courses would be very helpful no matter what I decide to study.	4.16	Positive
8. I can think of many ways that I use math outside of school.	3.98	Positive
9. Mathematics is one of my most dreaded subjects.	3.96	Positive
10. My mind goes blank and I am unable to think clearly when working with mathematics.	3.88	Positive
11. Studying mathematics makes me feel nervous.	3.78	Positive
12. Mathematics makes me feel uncomfortable.	3.08	Neutral
13. I am always under a terrible strain in a math class.	3.20	Neutral
14. When I hear the word mathematics, I have a feeling of dislike.	3.28	Neutral
15. It makes me nervous to even think about having to do a mathematics problem.	3.34	Neutral
16. Mathematics does not scare me at all.	3.22	Neutral
17. I have a lot of self-confidence when it comes to mathematics.	3.08	Neutral
18. I am able to solve mathematics problems without too much difficulty.	3.42	Positive
19. I expect to do fairly well in any math class I take.	3.82	Positive
20. I am always confused in my mathematics class.	3.52	Positive
21. Mathematics is a very interesting subject.	3.96	Positive

22. I am willing to take more than the required amount of mathematics.	4.42	Very positive
23. I plan to take as much mathematics as I can during my education.	3.68	Positive
24. The challenge of math appeals to me.	3.96	Positive
25. I think studying advanced mathematics is useful.	4.06	Positive
26. I believe studying math helps me with problem solving in other areas.	4.14	Positive
27. I am comfortable expressing my own ideas on how to look for solutions to a difficult problem in math.	3.88	Positive
28. I am comfortable answering questions in math class.	3.70	Neutral
29. A strong math background could help me in my professional life.	4.06	Positive
30. I believe I am good at solving math problems.	3.42	Positive
Overall Mean	3.82	Positive

Legend: 4.21-5.00 – Very Positive, 3.41-4.20 – Positive, 2.61-3.40 – Neutral, 1.81 -2.60 – Negative, 1.00-1.80 – Very Negative

Table 7 presents the students' level of attitude toward learning Mathematics in the Modern World (MATH 01). As shown, the respondents generally expressed positive attitudes toward the subject, with an overall mean of 3.82, interpreted as Positive.

Among the highest-rated statements were: "Mathematics is a very worthwhile and necessary subject" (4.26), "I want to develop my mathematical ability" (4.52), "Mathematics helps develop the mind and teaches a person to think" (4.58), and "Mathematics is important in everyday life" (4.54), all interpreted as Very Positive. These findings indicate that the students recognize the value and usefulness of mathematics in daily life and intellectual development.

Conversely, a few statements received neutral ratings, such as "Mathematics makes me feel uncomfortable" (3.08) and "When I hear the word mathematics, I have a feeling of dislike" (3.24), suggesting that while most students view mathematics positively, a small number still experience mild anxiety or uneasiness toward the subject. Overall, the results reveal that the respondents possess a generally positive attitude toward learning Mathematics in the Modern World, reflecting their appreciation for its practical applications, mental benefits, and significance in education and everyday life.

These findings are supported by previous research which emphasizes the link between positive attitudes and mathematical engagement. Chen *et al.* (2018) found that students with a positive attitude toward mathematics demonstrate higher motivation and engagement, which can contribute to better understanding of mathematical concepts. Similarly, Subia, Salangsang, and Medrano (2018) reported that although students generally have positive attitudes toward mathematics, a subset experiences math anxiety, which can coexist with overall appreciation for the subject. These studies support the interpretation that while most students' value mathematics and recognize its benefits, some still experience mild discomfort or anxiety.

Table 8: Relationship between Senior High School Background and Students' Performance in Mathematics in the Modern World (MATH 01)

Variable(s) Correlated with MATH 01 Grade	**r**	**p-value**
SHS Track	0.311	0.028
SHS General Weighted Average (GWA)	0.575	0.000
Attitude toward Learning MATH 01	– 0.003	0.985

Table 8 presents the summary of statistical analyses on the relationship between students' final grades in Mathematics in the Modern World (MATH 01) and their academic background in Senior High School. As shown in the table, the computed Pearson correlation coefficient of 0.311 indicates a positive relationship between the two variables. Although the strength of the correlation is modest, the corresponding p-value of 0.028, which is below the 0.05 level of significance, confirms that the relationship is statistically significant. This suggests that the students' SHS Track is meaningfully associated with their academic performance in MATH 01, implying that students from certain tracks may exhibit slightly better alignment with the competencies required in the course.

Furthermore, the Pearson correlation result between SHS General Weighted Average (GWA) and MATH 01 grade yielded an r-value of 0.575 indicates a positive correlation between the two variables, with a p-value of 0.000, which is below the 0.05 level of significance, suggests that the relationship is statistically significant. These results imply that students who performed well in Senior High School generally tended to achieve higher grades in MATH 01.

However, the correlation between the students' attitude toward learning Mathematics in the Modern World and their MATH 01 grade the computed Pearson r-value of - 0.003 indicates a negative relationship between the two variables. The p-value of 0.985, which is greater than the 0.05 level of significance, suggests that the relationship is not statistically significant. This indicates that the students' attitude, whether positive or negative, did not

have a measurable influence on their actual performance in MATH 01.

These findings are consistent with prior research. Manugas, Pepito, Fernandez, and Canque (2022) found that SHS track significantly predicts students' college performance, supporting the observed relationship between academic background and MATH 01 performance. Likewise, Hodara and Lewis (2016) reported that high school GPA (similar to GWA) is a strong predictor of college achievement, confirming the importance of prior academic success. On the other hand, Chen, Bae, Battista, *et al.* (2018) noted that while a positive attitude toward mathematics can increase engagement and motivation, it does not always directly translate into higher grades, which aligns with the non-significant relationship observed between attitude and MATH 01 performance in this study.

CONCLUSION

Based on the findings of the study, most respondents came from the HUMSS and TVL strands and generally demonstrated strong academic preparation, as reflected in their Outstanding SHS GWA ratings. Their performance in Mathematics in the Modern World (MATH 01) was generally rated Very Satisfactory to Outstanding, indicating adequate foundational competencies. The study found that both SHS Track and SHS GWA were significantly associated with MATH 01 performance, highlighting the importance of prior academic preparation in college mathematics. In contrast, although students showed generally positive attitudes toward mathematics, these attitudes did not significantly influence their MATH 01 grades, suggesting that positive perceptions alone are insufficient to ensure higher academic achievement without strong academic foundations. Overall, SHS academic background plays a more significant role in students' MATH 01 performance than their attitudes toward the subject.

Future researchers are encouraged to replicate this study using larger and more diverse samples and to investigate other factors, such as study habits, learning strategies, teaching methods, and learning environments. Mathematics instructors should provide differentiated instruction based on students' SHS backgrounds, while educational institutions should offer bridging or preparatory programs to strengthen the mathematical readiness of students, particularly those from non-STEM strands.

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