Attitude towards Mathematics and Quality of Instruction In Relation to Academic Performance: Implications for Educational Enhancement

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ABSTRACT

This study determined the relationship between students' attitude toward mathematics, perceived quality of mathematics instruction, and academic performance among Grade 11 students in one private high school in Negros Occidental during the School Year 2026–2027. Specifically, the study examined students' attitude toward mathematics in terms of enjoyment, fear, anxiety and distress, use of mathematics in everyday life, and perceived mathematics achievement. It also assessed the perceived quality of mathematics instruction based on teacher support, disciplinary climate, encouragement of mathematical thinking, and fostering reasoning. In addition, the study determined the level of students' academic performance and examined whether significant relationships existed among attitude toward mathematics, quality of mathematics instruction, and academic performance. The study employed a descriptive-correlational research design to describe the variables and determine the relationships among them without manipulating any variable. Data were gathered using adopted and modified survey questionnaires that measured students' attitudes toward mathematics and their perceptions of the quality of mathematics instruction. Students' academic performance was determined using their final mathematics grades. The collected data were analyzed using descriptive statistics and Spearman's rank-order correlation to determine the levels of the variables and the significance of their relationships.

Keywords: Attitude toward mathematics, quality of mathematics instruction, academic performance, Grade 11 students, descriptive-correlational research

INTRODUCTION

Mathematics has long been recognized as a foundational discipline in education, serving as a critical tool for logical reasoning, problem-solving, and decision-making in everyday life. Despite its importance, many students continue to struggle with mathematics due to negative attitudes, anxiety, and perceptions of difficulty. Recent studies emphasize that learners' dispositions toward mathematics significantly influence their motivation, engagement, and achievement (Alova, 2021; Oracion & Abina, 2021).

Equally important is the role of instructional quality. Effective teaching practices—characterized by clarity, cognitive activation, and supportive teacher-student interactions—have been associated with positive student learning experiences and outcomes (Doño & Mangila, 2021). When considered together, students' attitudes and perceived quality of instruction may be related to how learners experience and perform in mathematics.

This study explores the relationship between attitude toward mathematics, perceived quality of instruction, and academic performance. By examining these variables, the research aims to provide evidence on how psychological and pedagogical factors are associated with learning outcomes, with implications for educational enhancement. Because the study uses a descriptive-correlational design, the findings are interpreted in terms of relationships rather than cause-and-effect effects.

Although numerous studies have examined students' attitude toward mathematics, quality of instruction, and academic performance independently, limited research has investigated the association of these variables within a single framework, particularly among Grade 11 learners in Philippine private schools. Existing studies have largely focused on public school settings or have examined only one predictor of academic performance, providing limited evidence on how students' attitudes and perceived instructional quality are related to mathematics achievement in private educational institutions. This gap restricts the contextual understanding needed to develop evidence-based interventions that address the unique learning environment of private schools. Addressing this gap, the present study examines the relationships among attitude toward mathematics, quality of instruction, and academic performance among Grade 11 learners in a private secondary school in Negros Occidental, providing findings that may contribute to mathematics instruction and educational planning.

METHODOLOGY

Research Design

The descriptive aspect of the study was utilized to determine the level of students' attitude toward mathematics, the perceived quality of mathematics instruction, and the academic performance of Grade 11 students. The correlational aspect was used to determine whether statistically significant relationships existed between attitude toward mathematics and academic performance and between perceived quality of mathematics instruction and academic performance. No variable was manipulated, and the findings were interpreted as associations rather than causal effects.

The descriptive aspect of the study was utilized to determine the level of students' attitude toward mathematics, the quality of mathematics instruction, and the academic performance of Grade 11 students. Specifically, it described the respondents' perceptions regarding enjoyment in mathematics, fear, anxiety and distress in mathematics, use of mathematics in everyday life, perceived mathematics achievement, teacher support, disciplinary climate, cognitive activation in encouraging mathematical thinking, and cognitive activation in fostering reasoning.

Subject and Respondents of the Study

The respondents of this study were Grade 11 students enrolled in one private secondary school in Negros Occidental during School Year 2026–2027.

Population and Sample Size

The population of the study consisted of all Grade 11 students enrolled in the three identified sections of the school during School Year 2026–2027. A total of 112 students comprised the target population.

Because the total population of Grade 11 students in the three identified sections was manageable, the study used total enumeration (census) sampling. All 112 eligible students were invited to participate; therefore, the target population and the final number of respondents were both 112, subject to the stated ethical and participation requirements.

Sampling Procedure

Total enumeration was used as the sampling procedure because the number of Grade 11 students in the three identified sections was sufficiently manageable for inclusion of the entire target population. The researcher coordinated with the school administration and class advisers to identify the eligible Grade 11 students. All eligible students were invited to participate, and no sampling frame was reduced through random selection. This procedure ensured that all students in the three identified sections had an opportunity to participate.

Ethical Considerations

Before the conduct of the study, the researcher secured the necessary permission from the appropriate school authorities. The purpose, procedures, expected duration, and voluntary nature of participation were explained to the respondents. Informed consent was obtained from participants who were legally able to provide consent,

while parent or guardian consent and student assent were obtained for participants who were minors, as applicable. Respondents were informed that they could decline or withdraw from the study without penalty. No names were required on the questionnaires; responses were coded and treated confidentially, and the information was used only for the purposes of the study. Academic grades were obtained from authorized school records only after the appropriate permission had been secured. The researcher took reasonable measures to protect the privacy and confidentiality of the respondents and their academic information.

Data Collection Procedure

After the necessary permissions and consent requirements were completed, the researcher administered the questionnaires to the Grade 11 respondents at an agreed schedule. The instructions were explained clearly before the questionnaires were distributed. Respondents were given sufficient time to answer the instruments independently and were reminded not to write identifying information on the questionnaire. Upon completion, the questionnaires were collected, checked for completeness, coded, and prepared for statistical analysis. The respondents' final mathematics grades were obtained from authorized school records and encoded using corresponding codes to maintain confidentiality.

Data Gathering Instrument

The study utilized a survey questionnaire consisting of two parts to gather data on respondents' attitude toward mathematics and perceived quality of mathematics instruction.

The first part of the questionnaire measured attitude toward mathematics. It was fully adopted from the validated instrument used by Calingayan (2025) in the study "Attitude towards Mathematics and Academic Performance of Senior High School: Basis for an Intervention Program." The instrument consists of 19 items covering four dimensions: enjoyment in mathematics, fear, anxiety and distress in mathematics, use of mathematics in everyday life, and perceived mathematics achievement (Appendix C). Since the instrument was adopted without modification, its original content and structure were retained. Responses were rated using a five-point Likert scale: 5 – Strongly Agree, 4 – Agree, 3 – Neutral, 2 – Disagree, and 1 – Strongly Disagree. For interpretation of mean scores, 4.21–5.00 was classified as Very High, 3.41–4.20 as High, 2.61–3.40 as Moderate, 1.81–2.60 as Low, and 1.00–1.80 as Very Low.

The second part of the questionnaire measured the perceived quality of mathematics instruction. It was adapted from the instrument developed by Liu et al., which was based on the OECD Programme for International Student Assessment (PISA) 2022 Student Questionnaire. The questionnaire consists of 29 items covering four dimensions: teacher support, disciplinary climate, encouragement of mathematical thinking, and fostering reasoning (Appendix C). Minor modifications were made to ensure that the items were appropriate for the local context and aligned with the objectives of the present study. Responses were measured using a five-point frequency scale: 5 – Every lesson or almost every lesson, 4 – More than half of the lessons, 3 – About half of the lessons, 2 – Less than half of the lessons, and 1 – Never or almost never. For interpretation of mean scores, 4.21–5.00 was classified as Very High, 3.41–4.20 as High, 2.61–3.40 as Moderate, 1.81–2.60 as Low, and 1.00–1.80 as Very Low.

To establish the content validity of the adapted instrument, it was evaluated by a panel of experts in mathematics education and educational research. The questionnaire obtained a Content Validity Index (CVI) of 1.00, indicating excellent content validity and demonstrating that the experts considered the items clear, relevant, and appropriate for measuring the constructs of the study.

The reliability of the instrument was determined through a pilot test conducted among respondents with characteristics similar to those of the target participants but who were not included in the actual study. The instrument obtained a Cronbach's alpha coefficient of 0.929, indicating excellent internal consistency and supporting the use of the instrument for the actual data collection.

The respondents' academic performance was determined using their final mathematics grades for School Year 2025–2026, as reflected in their official school records. The grades were interpreted based on the performance

descriptors provided in Department of Education Order No. 8, s. 2015 (Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program).

Data Analyses

After data collection, the completed questionnaires were checked for completeness, coded, tallied, tabulated, and analyzed using the appropriate statistical tools. Descriptive statistics were used to summarize the levels of the study variables, while Spearman's rank-order correlation coefficient (ρ) was used to determine the direction and strength of the relationships between the ordinal survey measures and academic performance. The level of significance was set at 0.05. A p-value less than or equal to 0.05 was considered statistically significant; otherwise, the null hypothesis was not rejected.

To answer Statement of the Problem 1, which asks about the level of students' attitude toward mathematics, the mean and standard deviation were used. The mean was used to summarize the average response, while the standard deviation described the variability of responses.

The formula for Mean is presented below:

$$\bar{x} = \frac{\sum x}{n}$$

Where:

$\bar{x}$ – mean

Σ – summation notation

x – scores

n – number of scores or sample size

The mean scores in problem number 1 were interpreted as follows:

Scale	Description	Mean Score Range	Interpretation	Verbal Interpretation
5	Strongly Agree	4.21 – 5.00	Very High	The respondents strongly agree with the statement, reflecting a very high level of the measured attitude.
4	Agree	3.41 – 4.20	High	The respondents agree with the statement, reflecting a high level of the measured attitude.
3	Neutral	2.61 – 3.40	Moderate	The respondents are neutral toward the statement, reflecting a moderate level of the measured attitude.
2	Disagree	1.81 – 2.60	Low	The respondents disagree with the statement, reflecting a low level of the measured attitude.
1	Strongly Disagree	1.00 – 1.80	Very Low	The respondents strongly disagree with the statement, reflecting a very low level of the measured attitude.

To answer Statement of the Problem 2, which asks about the perceived quality of mathematics instruction, the mean and standard deviation were also used. The same five-point mean-score interpretation was applied consistently to the instructional-quality scale.

To interpret the result, the interpretation guide is presented below.

Scale	Description	Numerical Range	Interpretation	Verbal Interpretation
5	Always/ almost always	4.21 – 5.00	Very High	The statement occurs in every lesson or almost every lesson.
4	Often	3.41 – 4.20	High	The statement occurs in more than half of the lessons.
3	Sometimes	2.61 – 3.40	Moderately High	The statement occurs in about half of the lessons.
2	Rarely	1.81 – 2.60	Low	The statement occurs in less than half of the lessons.
1	Never/ almost never	1.00 – 1.80	Very Low	The statement does not occur or almost never occurs in the lessons.

To answer Statement of the Problem 3, which asks about the level of academic performance of Grade 11 students, the mean was used and interpreted according to the performance descriptors in DepEd Order No. 8, s. 2015.

Range	Interpretation
90 – 100	Outstanding
85 – 89	Very Satisfactory
80 – 84	Satisfactory
75 – 79	Fairly Satisfactory
Below 75	Did not meet expectation

$r_s r_s$To answer Statement of the Problem 4, which asks whether a significant relationship exists between students' attitude toward mathematics and their academic performance, Spearman's rank-order correlation coefficient (ρ) was used. Spearman's rho was selected to determine the direction and strength of the monotonic association between the variables without assuming a linear relationship or normal distribution.

$$r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

Formula Definitions

$r_s\rho$ = Spearman's rank-order correlation coefficient

d = Difference between the ranks of corresponding variables (Rankx − Ranky)

Σd^2 = Sum of the squared differences between corresponding ranks

$\sum d^2$ = Sum of the squared difference values

n = Number of paired observations

r_sTo answer Statement of the Problem 5, which asks whether a significant relationship exists between perceived quality of mathematics instruction and academic performance, Spearman's rank-order correlation coefficient (ρ) was likewise used. All correlation tests were evaluated at the 0.05 level of significance.

RESULTS AND DISCUSSION

This section includes the presentation of data gathered and the discussion, interpretation, and implication of the findings of the study. The results were presented in tables, which were then analyzed and interpreted. The order of the presentation follows the sequence of the problems identified in the study.

Level of Attitude Towards Mathematics

The table presents the level of attitude towards mathematics among Grade 11 students in terms of enjoyment in mathematics, fear, anxiety and distress in mathematics, use of mathematics in everyday life, and perceived mathematics achievement. Understanding students' attitudes toward mathematics is important because it influences their motivation, engagement, and willingness to learn the subject. The results provide insights into how students perceive mathematics and its relevance to their academic and daily lives.

Table 1. Level of Attitude Towards Mathematics when taken as a whole and in terms of Enjoyment, Fear, Anxiety, and Distress, use of mathematics in everyday life, and Perceived Mathematics Achievement.

Statements	Mean	SD	Interpretation
Enjoyment in Mathematics	**3.00**	**0.90**	**Moderate**
1. I enjoy solving math problems whenever I see them.	3.05	1.11	Moderate
2. I feel happy when dealing with mathematics.	2.87	1.13	Moderate
3. I enjoy fiddling with math in my free time.	2.88	1.26	Moderate
4. I like math topics so much that I have started thinking about everything mathematically.	2.72	1.19	Moderate
5. I like to practice math.	3.50	1.22	High
6. I think the mathematics course is delightful and fun.	2.95	1.27	Moderate
Fear, anxiety, and distress in Mathematics	**2.69**	**0.87**	Moderate
7. I'm so bored in math class.	2.38	1.12	Low
8. I think math is a very boring class.	2.34	1.16	Low
9. I study only math to pass the course.	2.67	1.14	Moderate
10. Math is the course I fear most.	3.12	1.36	Moderate
11. I am annoyed that math is a course consisting of symbols and formulas.	2.93	1.31	Moderate
The use of mathematics in everyday life	**3.85**	**0.84**	**High**
12. I believe the knowledge I get in math will be useful.	4.09	0.97	High
13. I believe what I learn in mathematics will work for me.	3.82	1.08	High

14. I think I will need math in my work life in the future.	3.87	1.19	High
15. I think that math has an important place in my daily life.	3.62	1.13	High
Perceived Mathematics Achievement	**2.94**	**0.76**	Moderate
16. My friends think that I am a successful student in math.	2.79	1.04	Moderate
17. I see myself as a successful student in math.	2.74	1.02	Moderate
18. I am not a model student in math.	3.20	1.25	Moderate
19. I think I am a good student in math.	3.03	1.20	Moderate
Attitude Towards Mathematics as a whole	**3.12**	**0.49**	**Moderate**

Legend: (4.21 – 5.00)-Very High; (3.41 – 4.20)-High; (2.61 – 3.40)-Moderate; (1.81 – 2.60)-Low; (1.00 – 1.80)-Very Low

Table 1 presents the respondents' level of attitude toward mathematics across four dimensions: enjoyment in mathematics, fear, anxiety and distress in mathematics, use of mathematics in everyday life, and perceived mathematics achievement. The overall mean score of 3.12 (SD = 0.49) indicates a moderate attitude toward mathematics, suggesting that students generally possess neither highly positive nor highly negative perceptions of the subject. The relatively low standard deviation indicates that the respondents' attitudes were fairly consistent, with only minimal variation in their responses.

The use of mathematics in everyday life obtained the highest mean score (M = 3.85, SD = 0.84). This result implies that students recognize the relevance and practical value of mathematics in their daily activities and future careers. The standard deviation indicates moderate variability, suggesting that although most students agreed with this perception, their responses differed to some extent. Specifically, the statement "I believe the knowledge I get in math will be useful" received the highest mean (M = 4.09, SD = 0.97), indicating strong agreement, while the standard deviation shows some differences in the degree of agreement among respondents. This finding is consistent with the study of Wen and Dubé (2022), which reported that students who perceive mathematics as valuable and applicable to real-life situations tend to develop more positive attitudes toward the subject and demonstrate better academic engagement.

The dimension enjoyment in mathematics yielded a mean score of 3.00 (SD = 0.90). This finding suggests that students experience a fair amount of enjoyment when learning mathematics but are not highly enthusiastic about the subject. The standard deviation indicates moderate variation in students' responses, reflecting differences in the extent to which they enjoy learning mathematics. Among the indicators, "I like to practice math" received the highest rating (M = 3.50, SD = 1.22), indicating that while many students appreciate opportunities to improve their mathematical skills through practice, others expressed less favorable views, as reflected in the relatively higher variability. Research by Wang et al. (2021) emphasized that mathematical interest and enjoyment are associated with higher achievement and self-efficacy, highlighting the importance of fostering enjoyable learning experiences in mathematics classrooms.

The dimension fear, anxiety, and distress in mathematics obtained a mean score of 2.69 (SD = 0.87). Although students did not strongly express fear or anxiety, some level of apprehension toward mathematics remains evident. The standard deviation suggests moderate variation, indicating that students differed in the degree to which they experienced mathematics-related anxiety. The statement "Math is the course I fear most" recorded a mean of 3.12 (SD = 1.36), suggesting that while many students perceived mathematics as challenging, others did not share the same level of fear, resulting in considerable variability in responses. This finding supports recent literature indicating that mathematics anxiety is associated with lower confidence and academic performance. According to Namkung et al. (2024), higher levels of mathematics anxiety are related to lower achievement and increased avoidance of mathematical tasks.

Finally, perceived mathematics achievement registered a mean score of 2.94 (SD = 0.76), interpreted as moderate. This suggests that students have an average level of confidence in their mathematical abilities. The relatively low standard deviation indicates that respondents' perceptions of their mathematical achievement were generally consistent. The statement "I think I am a good student in math" obtained a mean of 3.03 (SD = 1.20), indicating moderate self-belief regarding mathematical competence, while the higher standard deviation reflects differing levels of confidence among students. Recent studies have shown that students' self-perceptions and self-efficacy are associated with mathematics performance and achievement. Learners who possess greater confidence in their mathematical abilities tend to perform better and exhibit more positive attitudes toward mathematics (Živković et al., 2023; Aladil, 2024).

Overall, the findings reveal that students maintain a moderate attitude toward mathematics, characterized by strong recognition of its practical importance, moderate enjoyment, moderate levels of mathematics-related anxiety, and average confidence in their mathematical abilities. The standard deviations across the dimensions indicate moderate variability, suggesting that while students shared similar overall patterns, individual differences in perceptions and experiences remained evident. These results indicate areas that may be considered in instructional planning, particularly activities intended to support enjoyment, reduce mathematics-related anxiety, and strengthen students' confidence.

Level of Quality of Instruction

The table shows the level of quality of mathematics instruction as perceived by the students in terms of teacher support, disciplinary climate, cognitive activation through encouraging mathematical thinking, and fostering reasoning. Assessing the quality of mathematics instruction is essential because effective teaching practices contribute significantly to students' understanding, engagement, and overall learning experiences in mathematics. The findings serve as indicators of the effectiveness of instructional practices implemented in the classroom.

Table 2. Level of Quality of Mathematics Instruction when taken as a whole and in terms of Teacher Support, Disciplinary Climate, Cognitive Activation: Encourage Mathematical Thinking, and Cognitive Activation: Foster Reasoning.

Statements	Mean	SD	Interpretation
Teacher Support	4.10	0.85	**High**
How often…			
does the teacher show an interest in every student's learning?	4.01	0.99	High
does the teacher give extra help when the students need it?	4.25	0.92	Very High
does the teacher provide targeted support and guidance that directly helps students improve their understanding?	4.04	1.05	High
does the teacher continue teaching until the students understand?	4.09	1.05	High
Disciplinary Climate	3.30	0.68	**Moderate**
How often…			
Table 2 continuation.			
do you fail to listen to what the teacher says during classes?	3.25	1.09	Moderate
do noise and discomfort in the classroom disrupt learning?	3.69	1.10	High

does the teacher have to wait a long time for students to quiet down?	3.29	1.13	Moderate
do you find it difficult to work well because of class distractions?	3.54	1.10	High
do you not start working for a long time after the lesson begins?	3.11	1.06	Moderate
do you become distracted by using digital resources (e.g., smartphones, apps) during lessons?	3.06	1.19	Moderate
do you become distracted by other classmates using digital resources?	3.19	1.20	Moderate
Cognitive Activation: Encourage Mathematical Thinking	3.63	0.74	**High**
How often…			
does the teacher ask the class to think of problems from everyday life using new math knowledge?	3.61	0.98	High
does the teacher show the class how mathematics is useful in everyday life?	3.75	1.10	High
does the teacher encourage the class to "think mathematically"?	3.66	0.99	High
does the teacher teach the class to use mathematical logic in new situations?	3.69	1.03	High
does the teacher show the class that problems which seem difficult can be solved more easily by understanding how the number system is organized?	3.72	0.97	High
does the teacher give problems from everyday life involving numbers and ask the class to make a decision about the situation?	3.50	0.96	High
does the teacher ask the class how different topics connected to bigger mathematical ideas?	3.53	0.93	High
does the teacher encourage the class to apply mathematics in solving problems from everyday life?	3.63	0.95	High
does the teacher explain how different mathematical ideas connect to a larger context?	3.62	0.98	High
Cognitive Activation: Foster Reasoning	3.56	0.76	High
How often…			
does the teacher ask the class to solve math problems without computing anything?	3.12	1.05	Moderate
does the teacher ask the class to explain how we solved a math problem?	3.60	1.02	High
does the teacher ask the class to explain what assumptions we were making when solving a mathematics?	3.52	1.04	High
does the teacher ask the class to explain our reasoning when solving a mathematics problem?	3.61	1.04	High

does the teacher ask the class to defend our answer to a mathematics problem?	3.44	1.00	High
does the teacher ask the class to think about how new and old mathematics topics were related?	3.64	1.06	High
does the teacher encourage the class to think about how to solve mathematics problems in different ways than demonstrated in class?	3.70	0.99	High
does the teacher encourage the class to keep trying and persist even when they face difficulties with mathematical task?	3.65	1.02	High
does the teacher instruct the class to memorize mathematical rules and apply them in solving problems?	3.80	1.02	High
Quality of Mathematics Instruction as a whole	**3.65**	**0.60**	**High**

Legend: (4.21 – 5.00)-Very High; (3.41 – 4.20)-High; (2.61 – 3.40)-Moderate; (1.81 – 2.60)-Low; (1.00 – 1.80)-Very Low

Table 2 presents the perceived quality of mathematics instruction among Grade 11 students. The overall mean score of 3.65 (SD = 0.60) indicates a high level of perceived instructional quality. The relatively low standard deviation suggests that the respondents' perceptions were generally consistent.

Among the dimensions, teacher support obtained the highest mean (M = 4.10, SD = 0.85), suggesting that students generally perceive their teachers as supportive and responsive to their learning needs. The standard deviation indicates moderate variation in students' responses, implying that while most students viewed their teachers positively, the degree of perceived support differed slightly among respondents. The item "The teacher gives extra help when students need it" received the highest rating (M = 4.25, SD = 0.92), reflecting a very high level of teacher support. The standard deviation indicates some variability in students' experiences, although the majority consistently agreed that their teachers provided additional assistance when needed.

The dimension cognitive activation: encourage mathematical thinking obtained a high mean score (M = 3.63, SD = 0.74). This indicates that teachers frequently encourage students to analyze problems, explain their ideas, and think critically during mathematics lessons. The standard deviation suggests relatively consistent perceptions among students regarding this instructional practice. Likewise, cognitive activation: foster reasoning received a high mean (M = 3.56, SD = 0.76), indicating that teachers regularly promote logical reasoning, justification of answers, and problem-solving. The moderate standard deviation reflects slight differences in students' perceptions but generally indicates agreement that reasoning is emphasized during instruction.

In contrast, disciplinary climate obtained a moderate mean score (M = 3.30, SD = 0.68), suggesting that students experienced some classroom distractions or management concerns. The relatively low standard deviation indicates that these perceptions were fairly consistent across respondents.

The findings are consistent with the study of Lazonder et al. (2022), who reported associations between teacher support, cognitively activating instruction, student engagement, and mathematics achievement. Similarly, the OECD (2023) emphasized that supportive classroom environments and instructional practices that promote reasoning are associated with students' mathematical understanding, motivation, and learning outcomes. These findings should be interpreted as evidence of patterns of association rather than proof that particular instructional practices cause higher achievement.

Level of Academic Performance of Grade 11 Students

The table presents the academic performance of Grade 11 students in mathematics.

Table 3. Level of Academic Performance of Grade 11 Students.

Level of Academic Performance	f	Mean	SD	Interpretation
Outstanding	25	85.62	5.85	Very Satisfactory
Very Satisfactory	45			
Satisfactory	21			
Fairly Satisfactory	21			
Did Not Meet Expectations	0			
Total	112			

Legend: (90–100) – Outstanding; (85–89) – Very Satisfactory; (80–84) – Satisfactory; (75–79) – Fairly Satisfactory; (Below 75) – Did Not Meet Expectations.

Table 3 shows the academic performance of the Grade 11 students. The results reveal that the students obtained an overall mean grade of 85.62 (SD = 5.85), interpreted as very satisfactory. The standard deviation indicates a moderate spread of scores, suggesting that although students generally performed well, there were noticeable differences in their individual academic performance.

Of the 112 respondents, the largest proportion (45 students) achieved a very satisfactory rating, while 25 students attained an outstanding rating. Moreover, 21 students were classified as satisfactory and another 21 students as fairly satisfactory. The distribution of ratings indicates that most students performed within the upper achievement categories, although some variability in performance was evident, as reflected by the standard deviation.

The findings suggest that the respondents generally perform well academically in mathematics. The mean grade indicates that students possess an adequate understanding of mathematical concepts and skills necessary to meet the curriculum standards. Meanwhile, the standard deviation of 5.85 implies that although the overall performance was very satisfactory, individual achievement levels varied, with some students performing considerably higher or lower than the mean.

The findings are consistent with the study of Kim et al. (2021), who reported that students exposed to effective classroom instruction and supportive learning environments generally demonstrate higher academic achievement. Likewise, UNESCO (2023) emphasized that quality teaching, learner engagement, and supportive educational environments are associated with improved academic outcomes. Overall, the students' very satisfactory academic performance, together with the moderate variability in their scores, suggests that while most learners have achieved the expected level of competence in mathematics, some differences in achievement remain, highlighting the need for continued instructional support to address individual learning needs.

Relationship between Attitude Towards Mathematics and Academic Performance

The table presents the relationship between students' attitude toward mathematics and their academic performance. Numerous studies suggest that students' attitudes toward a subject may influence their level of achievement. Thus, determining whether a significant relationship exists between these variables helps explain how students' perceptions and feelings toward mathematics relate to their academic success

Table 4. Relationship between Attitude Towards Mathematics and Academic Performance.

Variable	Spearman's rho (ρ)	p-value	Decision for H_o	Interpretation
Attitude toward Mathematics	-0.061	0.525	Failed to reject H_0	Not significant
Academic Performance				

Table 4 presents the relationship between students' attitude toward mathematics and their academic performance. The results yielded a correlation coefficient of ρ = -0.061 with a p-value of 0.525, which is greater than the 0.05 level of significance. Hence, the null hypothesis was not rejected, indicating that there was no statistically significant correlation between students' attitude toward mathematics and their academic performance.

The result indicates that, within this sample, students' reported attitudes toward mathematics were not significantly associated with their mathematics grades. Although students demonstrated a moderate attitude toward mathematics, the correlation coefficient was very close to zero, indicating a negligible association in the observed data. Because the research design is correlational, this finding should not be interpreted as evidence that attitude causes or does not cause differences in academic performance.

The result aligns with the findings of Sari and colleagues (2022), who reported that attitude toward mathematics alone was not a strong statistical predictor of academic achievement when other factors such as study habits, instructional quality, and prior knowledge were considered. Similarly, Yildiz et al. (2021) reported that students' attitudes may be related to achievement without necessarily producing a statistically significant correlation in every context. The present finding therefore suggests that academic performance may be associated with multiple learner and contextual factors that were not examined in this study.

Relationship between Quality of Mathematics Instruction and Academic Performance

The table presents the relationship between the quality of mathematics instruction and students' academic performance. Quality instruction is considered a crucial factor in promoting effective learning and improving student outcomes. Examining the association between these variables provides a deeper understanding of whether students' perceptions of instructional quality are related to their academic achievement in mathematics.

Table 5. Relationship between Quality of Mathematics Instruction and Academic Performance.

Variable	Spearman's rho (ρ)	p-value	Decision for H_o	Interpretation
Perceived Quality of Mathematics Instruction	-0.067	0.480	Failed to reject H_0	Not significant
Academic Performance				

Table 5 shows the relationship between the perceived quality of mathematics instruction and students' academic performance. The computed correlation coefficient was ρ = -0.067 with a p-value of 0.480, which exceeds the 0.05 significance level. Therefore, the null hypothesis was not rejected, indicating that there was no statistically significant correlation between perceived quality of mathematics instruction and academic performance.

The result indicates that, although students perceived mathematics instruction to be of high quality, this perception was not significantly associated with their academic grades in the present sample. The near-zero correlation suggests a negligible observed association. Other factors, such as students' learning strategies, motivation, socioeconomic conditions, and prior mathematical knowledge, may also be relevant to academic performance; however, these factors were not measured in the present study. Because the design was correlational, the finding does not establish that instructional quality causes or fails to cause changes in academic performance.

The finding is supported by the study of Fernandez et al. (2023), which reported that students' perceptions of instructional quality do not always correspond directly to achievement outcomes. Likewise, Schukajlow (2022) emphasized that while quality instruction is associated with engagement and understanding, academic performance is also shaped by individual learner characteristics and contextual factors. Consequently, the present results should be understood as describing the observed relationship between perceived instructional quality and academic performance rather than establishing a causal effect.

CONCLUSION

Based on the findings of the study, the following conclusions were drawn: Grade 11 students demonstrated a moderate or generally neutral attitude toward mathematics, recognizing its importance while reporting moderate levels of enjoyment, confidence, and perceived mathematics achievement. The perceived quality of mathematics instruction was high, particularly in teacher support and the encouragement of mathematical thinking, although the disciplinary climate was rated moderate. Grade 11 students demonstrated a very satisfactory level of academic performance in mathematics. There was no statistically significant correlation between students' attitude toward mathematics and their academic performance ($\rho = -0.061$, $p = 0.525$). Likewise, there was no statistically significant correlation between perceived quality of mathematics instruction and academic performance ($\rho = -0.067$, $p = 0.480$). These findings describe associations within the study sample and should not be interpreted as evidence of causal relationships.

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