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Attitude Towards Mathematics and Academic Performance of Senior High School: Basis for an Intervention Program

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Abstract. The key purpose of this study is to identify the relationship between the attitude of Grade 11 students of Hungduan National High School toward learning mathematics and their Mathematics performance. This descriptive study utilized the Mathematics Attitude Scale by Yasar (2014) as the main instrument. The findings indicate that most students demonstrated positive views about their mathematical abilities; however, they were unsure about their enjoyment level and progress in math. In addition, they showed mixed feelings about mathematics, demonstrating a neutral disposition. Further, students showed signs of confusion about their levels of fear, anxiety, and distress concerning mathematics, demonstrating a multifaceted emotional connection with the subject. Notably, the level of their attitude toward learning Mathematics determines their Mathematics performance. In light of the findings, it is recommended that the attitude towards learning the subject should also be given attention, and varied strategies should be utilized to cater to the needs of students.

Keywords: Attitude towards Mathematics; Mathematics learning; Mathematics performance; SHS.

1.0 Introduction

Mathematics performance remains a pressing international, national, and local issue. Student mathematics performance demonstrates a declining trend across nations since worldwide assessments such as the Programme for International Student Assessment (PISA) have shown other core subjects outperforming it. Numerous nations find it challenging to enhance students' mathematical abilities since this affects their future ability to succeed in their careers and make economic impacts. Mathematics proficiency levels remain below target among students based on standardized national test scores because numerous students cannot reach the required benchmark. The Hungduan National High School shows signs of deficient mathematics performance among its students, thus requiring urgent solutions. The critical situation needs quick action to teach students mathematics better, since good problem-solving ability constitutes an essential foundation for educational success and professional development.

Several studies investigate methods to enhance mathematical performance by analyzing variables that impact student success or failure in this subject. Academic performance levels of students remain directly influenced by their existing attitudes toward mathematics based on ongoing academic research findings. Sen (2013) states that positive learning attitudes drive a learner's motivation, problem-solving capabilities, and academic performance. Mazana et al. (2018) proved through their research that the synergistic effects of student attitudes, teaching

methodologies, and school environments determine mathematics performance. The study of Hwang and Son (2021), together with other scholars, validates the need to develop positive emotions about mathematics for boosting educational results. When student attitudes improve,, it might solve enduring difficulties with mathematics performance. Abosalem (2015) studied how Khalifa University students view mathematics in terms of their gender, nationality, data, and math scores, which governed student achievement results. It revealed that expatriate students held more favorable attitudes with better results when compared to their Emirati peers because cultural differences appear to affect mathematical achievement. Nahimana and Andala (2023) studied academic performance based on students' mathematics learning attitudes at Rwandan public secondary institutions, demonstrating that a positive mindset enhances educational success.

According to their research findings, a positive math attitude and strong motivation were linked to increased academic success. Geisler et al. (2023) found that student satisfaction and achievement bridge the gap between attitudes and educational results among university mathematics dropouts. Capuno et al. (2019) researched the relationship between Philippine junior high school students' study habits, attitudes, and academic results. According to their research, a positive attitude toward mathematics, combined with solid study discipline, leads students to achieve better academic results. Peteros et al. (2019) conducted a study involving Philippine students under the Conditional Cash Transfer Program who demonstrated positive mathematics attitudes and improved academic success results. The authors stressed that schools should create environments that develop student confidence and motivation to achieve better mathematics outcomes.

The study executed by Musa et al. (2022) measured the relationship between mathematical attitude and academic success among Nigerian secondary school students from Yobe. The researchers established a crucial positive statistical connection showing that positive mathematical attitudes lead students to achieve better academic outcomes. Khaiwal and Gupta (2025) researched how eleventh-grade students in India display attitudes toward mathematics and their corresponding academic achievements. Both research studies revealed a significant positive connection, which validates that students with positive attitudes achieve higher academic results. Males showed marginally elevated confidence measures, yet academic results matched those of females. These various studies establish the fundamental influence of attitudes on students' mathematical achievements at different education levels and geographic regions. Academic performance in mathematics improves through developing math-oriented attitudes, enhancing student confidence, and maintaining study routines.

Many studies about students' mathematics attitudes fail to address urban senior high school students' performance outcomes. Multiple researchers analyze students in elementary grade and junior high, but the lack of systematic studies about urban senior high students continues to be substantial. At the junior high school level, Aquino et al. (2019) researched math-related characteristics, behaviors, and academic achievements of students regarding mathematics education. Sunzuma et al. (2013) studied the geometrical learning attitude of Bindura urban secondary school students in specific mathematical domains. The research gap regarding senior high school students' mathematics performance, self-efficacy, and attitude prediction was studied by Fetalver and Merano (2021). The investigation identified three key elements that affect student mathematical success: adult-peer secondhand knowledge sharing, students' mathematics perception, and their fear of the subject. Appiah (2016) assessed how senior high school students in the Cape Coast Metropolis of Ghana understood mathematics while studying classroom learning environments there. Research shows that despite negative mathematics attitudes among students, they still held positive views about their classroom learning environment because both factors create complex interactions. Based on the research findings, we require additional specific investigations that probe urban high school students' mathematical competence from an improved perspective.

The study evaluates how academic success corresponds with a mathematical attitude among students from Grade 11 at Hungduan National High School. The study analyzes how respondents distribute according to their sex identity, age group, and parents' educational background to evaluate if those variables affect student attitudes. The research project includes performance measurement for mathematics subjects. It also surveys the direct effects that attitudes have on academic success. The research results will support future mathematics education studies by offering teachers teaching strategies and instructional methods to improve student motivation and mathematics achievement. The research findings will establish principles for future educational work that enhance student performance in mathematics and their overall academic growth.

2.0 Methodology

2.1 Research Design

The study adopted a quantitative research methodology through a descriptive survey approach for its investigative procedures. The design fits the research objective of understanding math attitudes between male and female Grade 11 students enrolled at Hungduan National High School. The researchers employed comparative analysis techniques to measure differences between groups based on demographics and used correlational analysis to relate performance outcomes to mathematical attitude ratings. This variation ensured the consistency and clarity of the study.

2.2 Research Locale

The study was done at Hungduan National High School, located in Mabaka, Hapao, Hungduan, Ifugao. The school is under the Department of Education and has a head, an administrative aide, and 22 faculty members. In terms of mathematics performance, data shows the school has been behind other schools for the past years, especially during the rise of the pandemic.

2.3 Research Participants

This study's respondents were the 35 grade 11 students of Hungduan National High School, Hungduan, Ifugao.

2.4 Research Instrument

A survey questionnaire served as the principal research instrument during this study. The study adopted the Short Form of Mathematics Attitude Scale: Its Psychometric Properties instrument designed by Metin Yaşar (2014). The research tool had two fundamental components: a demographic section and questions about students' mathematical attitudes toward learning. The research utilized a 5-point Likert-type scale for all responses from 1 (strongly disagree) to 5 (strongly agree). The survey questionnaire was tested for validity and reliability. The face and content validity were ensured by having it reviewed by the professor. Reliability analysis was also performed to ensure its internal consistency. The Cronbach's alpha coefficient of .828 showed good reliability from the analysis of 19 items.

2.5 Data Gathering Procedure

The research instruments and data collection process started after the researcher obtained permission from the school head to conduct the investigation. The researcher conveyed the research objectives to the mathematics teachers before asking for help with the survey administration process. The appointment for survey administration occurred at a time decided through mutual agreement between the school head and the researcher to maintain school operations. The entire research population received the survey at once during its administration. The respondents received instructions about upholding identity disclosure and were informed about their rights to maintain confidentiality throughout the process. The participants had sufficient time to complete their answers to the survey. The researcher obtained settled questionnaires from teachers after completion.

2.6 Data Analysis

The gathered data were analyzed using quantitative and qualitative methods. Frequency tables were combined with percentages and means to analyze the profile and attitudinal scale. Each item in the scale received specific rating options among the five response possibilities. The researchers utilized a T-test to determine the differences between groups. Pearson's analysis was used to analyze the relationship between variables.

2.7 Ethical Considerations

The researcher held an orientation to clarify the study's research objectives while presenting its essential details to the participants. Every participant granted informed consent to proceed with the data collection process. The researcher treated all collected responses with maximum care and implemented procedures to protect participant identities throughout the study.

3.0 Results and Discussion

3.1 Distribution of the Profile of the Respondents

Table 1 reveals that 18 of the 35 students enrolled in grade 11 for the 2022–2023 academic year are male, and 17 are female. Only two are between the ages of 19 and 20, while 33 are between the ages of 16 and 18. It is also clear that just 17 of the students' fathers attended college, while 18 did not. In comparison, 18 of the students' mothers attended college, and 17 did not.

Table 1. *Distribution of respondents in terms of Sex, Age, and Parents's Educational Attainment*

Profile of the Respondents	Categories	Frequencies
Sex	Male	18
	Female	17
Age	16 – 18	33
	19 – 20	2
Father's Educational Attainment	Did not go to college	18
	Went to college	17
Mother's Educational Attainment	Did not go to college	17
	Went to college	18

3.2 Level of Attitude of Respondents Towards Learning Mathematics

According to Table 2, respondents are undecided about whether they enjoy mathematics (average mean = 3.07) or detest it. Additionally, it was possible to see that the indicators' "agree" stance—"I like to practice math"—had a mean of 3.86. Students who hope to practice mathematical concepts reveal their positive disposition toward improving their math skills, even if they are uncertain about loving mathematics. The students express the lowest interest in playing with math during leisure time since their mean value (m=2.80) for the "unsure" response to "I enjoy fiddling with maths in my free time" is the lowest. Although students may not express complete mathematical liking, they show clear interest in enhancing their mathematical ability. Data demonstrates that education staff should understand that students want to improve their mathematics competence.

Table 2. *Enjoyment in Mathematics*

No.	Indicators	Mean	SD	QD
1	I enjoy solving math problems whenever I see them.	3.20	0.96	Unsure
2	I feel happy when dealing with mathematics.	3.20	0.91	Unsure
3	I enjoy fiddling with maths in my free time.	2.80	0.93	Unsure
4	I like maths topics so much that I have started thinking about everything mathematically.	2.83	1.09	Unsure
5	I like to practice math.	3.86	1.06	Agree
6	I think the Mathematics course is delightful and fun.	2.94	1.08	Unsure
Overall		**3.07**	**0.92**	**Unsure**

Study this finding by emphasizing the role of practice in mathematics engagement. According to Boaler (2016) and Dweck (2008), students build their growth mindset through dedicated mathematical practice that drives improved performance outcomes. According to Middleton and Spanias (1999), students enjoy mathematics based on contextual factors because they prefer structured learning activities and situations with direct relevance, but avoid mathematics in personal leisure time activities. According to Ryan and Deci (2000), STD demonstrates that students may engage through extrinsic motivation, like skill improvement, even when they lack intrinsic interest. Teachers should focus on creating strategies for engaging mathematics learning since students exhibit neutral feelings about mathematics, yet show positive views on skill enhancement. Mathematical concepts become more interesting when teachers connect them to everyday applications, according to Boaler (2016). Student participation increases through gamification in learning, as shown by Kapp (2012). Collaborative problem-solving (Vygotsky, 1978) also fosters a more interactive and engaging learning environment. The research results support these interventions because they demonstrate potential ways to boost student motivation and enhance mathematical performance.

Table 3 shows that students are uncertain about their involvement in fear and distress in mathematics because their average mean score equals 2.69. The highest score achieved by an indicator, "Maths is the course I fear most", reveals respondents are neutral about that statement since its average score is 2.89. Most people exhibit no actual fear of mathematics. These respondents sustain autonomy to discover mathematics excellence by continuing to study it. Mathematics teachers are essential to mentoring students until they understand whether mathematics is their subject of hate or love. Students resisted the statement "Mathematics is a very boring class" through their

lowest mean value (m=2.29). Consequently, this indicates their lack of agreement with this particular assertion. They do not know which subject they dread the most, and they disagree that math is uninteresting, as shown in this response. This indicates that they do not view arithmetic adversely. Notably, they have acknowledged that they are not bored by mathematics, while being unclear whether they dread it. This shows teachers that their students remain motivated to tackle any maths.

Table 3. *Fear, Anxiety, and Distress in Mathematics*

No.	Indicators	Mean	SD	QD
1	I'm so bored in math class.	2.51	0.95	Unsure
2	I think maths is a very boring class.	2.29	0.95	Disagree
3	I study maths only to pass the course.	2.51	1.26	Unsure
4	Maths is the course I fear most.	2.89	1.20	Unsure
5	I am annoyed that maths is a course consisting of symbols and formulas.	2.86	1.00	Unsure
Overall		**2.69**	**0.85**	**Unsure**

The evidence shows that students form their mathematical emotions based on how they experience their environment for learning rather than on the nature of the subject. Students develop more positive emotional connections with mathematics when they encounter learning spaces that promote engagement and student-student and student-teacher interactions, according to Frenzel et al. (2010). Hembree (1990) determined that previous negative mathematics experiences are the primary cause of math anxiety instead of deep-seated subject dislike. Self-determination theory (SDT) by Deci and Ryan (1985) explains the doubtful nature of student motivation toward mathematics study. According to their research, students who demonstrate high intrinsic motivation in mathematics because of engaging teaching or personal interest will develop better attitudes alongside reduced anxiety as time progresses. These findings support the belief that student' attitude toward math affects their anxiety because their interactions with the subject shape these emotions instead of the subject matter itself. Ashcraft and Krause (2007) propose two strategies to combat remaining fear and promote student engagement: developing positive classroom interactions and using active learning methods. The research demonstrates that students gain better mathematical mental skills after teachers use strategies that increase self-assurance in learning mathematics. The study reveals that teachers have an essential impact on their students' mathematical attitudes because they can develop classrooms with decreased anxiety and improved motivation.

Table 4 demonstrates to students how prevalent the usage of mathematics is among students nowadays. Most responders (mean average = 4.01) concur that mathematics is significant or beneficial. Research participants agree with both statements about the usefulness of math education since they completed the statements with mean scores of 4.11. The study shows that students endorse the opinion that studying mathematics helps them develop mental capabilities and teaches them appropriate reasoning skills. The mean value of 3.86 suggests learners agree with the belief that "what I learn in Mathematics will work for me." The students demonstrate their comprehension of the value of mathematics through their capability to see its real-world importance. Because it suggests that students have an inherent incentive to learn, this view is helpful to teachers.

Table 4. *The Use of Mathematics in Everyday Life*

No.	Indicators	Mean	SD	QD
1	I believe the knowledge I get in maths class will be useful.	4.11	1.07	Agree
2	I believe what I learn in Mathematics will work for me.	3.86	0.97	Agree
3	I think I will need maths in my work life in the future.	4.11	0.93	Agree
4	I think that maths has an important place in my daily life.	3.91	0.95	Agree
Overall		**4.01**	**0.89**	**Agree**

Research has shown that students encounter better learning results because of how they perceive mathematics. According to Boaler (2016), students who grasp the everyday applications of math actively seek complete immersion in mathematics studies and form constructive educational attitudes. Proper mathematical proficiency comprises more than computational abilities because it develops essential problem-solving skills that lead to career preparedness, according to Kilpatrick et al. (2001). According to the theory of mathematical discourse learning by Sfard (1998), mathematics involves acquiring facts and developing logical thinking patterns to solve problems. According to Eccles and Wigfield (2002), students who understand the long-term value of mathematics develop better study habits since they believe the discipline is beneficial. The data suggests educators should use students' mathematical self-perception to construct meaningful lessons based on practical applications. National

Research Council (2005) states that practical scenario connections improve student interest while enhancing conceptual understanding of mathematical concepts. Teachers use real-life applications as reinforcement strategies to develop stronger mathematical mindsets in their learners.

According to the data in Table 5 (average mean = 2.70), the respondents are unsure if they are good achievers in mathematics, which pertains to perceived mathematics achievement. The indication with the highest mean score, "I am not a model student in Maths," indicates that respondents agree with the statement and have a mean of 3.20. This shows that pupils may not be confident in their mathematical modeling skills. They were not entirely in agreement with the remark, however. They are models but lack the confidence to express it, which implies they are models. They are capable but require assistance in developing the confidence necessary to become models. The statement "I see myself as a successful student in Maths" reflects an "unsure" stand because learner responses show the lowest mean score at m=2.59. This indicates learners do not see themselves as successful mathematics students. People identify as less successful mathematics students, though they accept their capability to perform well in mathematics since they agree with the proposed statements. This encourages teachers by demonstrating that there is still hope for students to succeed in mathematics. All they require is fair guidance and instruction utilizing a mix of methods that will meet their demands.

Table 5. *Perceived Mathematics Achievement*

No.	Indicators	Mean	SD	QD
1	My friends think that I am successful at Maths.	2.77	0.87	Unsure
2	I see myself as a successful student in Maths.	2.54	0.88	Unsure
3	I am not a model student in Maths.	3.20	1.10	Unsure
4	I think I am a good student in Maths.	2.63	1.08	Unsure
Overall		**2.70**	**0.83**	**Unsure**

Studies of self-efficacy in mathematics learning demonstrate how students' confidence predictions precisely affect their academic results. Self-efficacy stands as the vital belief in the ability to succeed, according to Bandura (1997), in its application to scholarly achievement. The unfavorable effects on their performance emerge when students feel doubt about their mathematical skills because they start to avoid challenges, reduce their effort, and experience elevated anxiety. According to Pajares and Miller (1994), students who fail to recognize their mathematical skills demonstrate lower achievement than those who believe in their competence. Dweck (2006) explains in his growth mindset theory that students who believe in their effort-based potential succeed better. Usher and Pajares (2009) suggest three approaches to student confidence enhancement: positive reinforcement, mastery experiences, and social modeling. When teachers show student advancement, they deliver helpful feedback while enabling their students to observe others maintaining determination and achieving in mathematics. Boaler (2016) indicates that helping students reach better mathematical results by moving their performance achievements toward growth-oriented learning approaches. Through their implementation, educators aid students in building self-assurance in mathematics while identifying their capabilities, thus resulting in better subject achievement.

3.3 Difference in the Students' Attitude Toward Learning Mathematics

In terms of Sex

Male students match female students' mathematical learning attitudes since the statistical test shows non-significant differences between genders (p-value = .119). Research data shows that gender perceptions about the subject area are equivalent between male and female students, which questions established beliefs on mathematical differences between the two genders. This research refutes the widespread assumption that boys have stronger mathematical inclinations than girls because it shows equal mathematical dispositions between male and female students. The research results show that beliefs about math develop from personal learning contexts and core educational techniques instead of relying only on gender distinctions. Although male and female students share comparable general attitudes toward mathematics, studies of definite differences could remain active in their mathematical self-confidence and participation degrees.

Table 6. *Differences between males and females regarding attitude towards learning Mathematics*

Variables	Mean	t	P	Remarks
Male	2.77	-0.97	.119	Not Significant
Female	3.05			

The current research findings receive support from multiple studies that demonstrate equivalent mathematical attitude patterns between male and female students. Uwineza et al. (2018) recorded through their analysis that students from both gender lenses view mathematics critically in their academic and career paths. Boys show increased intensity when expressing their opinions about female students' aptitude in mathematics, which may create uncertainty in female academic confidence. Ghasemi and Burley (2019) discovered unexpected results regarding mathematics and science enjoyment since both boys and girls showed these interests, yet boys exhibited ongoing interest, according to their study. The available research indicates girls tend to like math in elementary grades before their interest level falls away as they move through their education system. Research by Leder (2019) reveals that boys tend to sign up for advanced mathematics classes when given the opportunity, demonstrating that gender differences might lengthen at upper academic levels. The current investigation disproves this theory because it shows equivalent mathematical attitude levels between female and male high school students. The evidence presented by Samuelsson and Samuelsson (2016) indicates that male students commonly view themselves as active participants in classroom discussions, so they believe they influence the material taught to their class. The study by Mutai (2016) found boys display superior attraction toward mathematics compared to girls, but the present research showed equal attitudes between genders. The research results highlight the requirement of gender-neutral educational approaches that create fair learning chances for students of both sexes in mathematics education. Establishing active learning through growth mindset development and equal entry to advanced math courses should eliminate identity-based confidence gaps between men and women in education. Establishing an equal learning space requires educating students about gender-biased stereotypes because doing so will help build proper mathematical abilities regardless of gender. Educational practices that embrace inclusivity and equitable participation support male and female students in following mathematics courses beyond biases from outdated social norms.

In terms of Age

Data exhibited in Table 7 reveals that age does not impact student attitudes toward mathematics learning because the p-value stood at .065. The similarities between the age-related attitudes of students between 16–18 and 19–20 demonstrate that demographic differences do not affect their mathematical perspectives. The data shows a consistent mathematical attitude persistence across all age groups. However, the general public usually expects students to gain more respect for math or lose interest in mathematics. The universal quality of students mathematical attitudes indicates that educational practices, individual drive, and academic history might surpass student age when examining perceptions about mathematics.

Table 7. *Differences between age groups regarding attitude towards learning Mathematics*

Variables	Mean	t	P	Remarks
16 – 18	2.90	-0.14	.065	Not Significant
19 – 20	3.00			

Multiple studies confirm the research conclusions, but other evidence reveals that age differences exist in mathematical attitudes depending on specific conditions. Research by Kamarudin et al. (2018) supports the present work by showing that mathematical interest does not decrease due to student aging. According to research, students display consistent attitudes toward mathematics in all their high school years, which demonstrates that education plays a more significant role than student age in shaping their mathematical perspectives. The research by Abubakar and Oguguo (2011) established that age and gender variations explained only 1.3% of the factors that affected student success in mathematics. Therefore, age likely influences performance in mathematics slightly but not significantly. The research conducted by Brandell and Staberg (2008) revealed that older students tended to support gender stereotypes about mathematics, especially in science-related subjects. Scholars have established that science program enrollment among boys leads to perceptions that mathematics belongs to males during their academic progression. This research finding shows a slight variation from the main results of this study. However, it implies that mathematical attitude patterns differ between certain student groups instead of affecting the entire student population. Mazana et al. (2019) examined how mathematical usefulness perceptions affect student subject attitudes. In addition, mathematical achievement depends on student attitudes since their learning performance, enjoyment, and motivation affect their results. The perception of mathematics by senior secondary school (SSS) students showed distinct variations according to their gender and present age level, as reported by Olutola et al. (2021). The research indicates that students undergo attitude shift patterns

regarding mathematics during higher grades, potentially due to growing educational requirements and professional targets. Academic institutions must use the initial stages to establish positive mathematics attitudes since student perspectives show consistent stability throughout their education. Educational programs should avoid assumptions regarding natural attitude development in older students. Instead, they should focus on student retention, coupled with misconception correction and teaching practices that adapt across educational levels. Previous research shows that gender stereotypes in math learning grow more intense with age; therefore, education systems need to establish measures for combating these prejudices early in school. The combination of promoting growth-oriented mindsets, hands-on applications, and group-based learning helps maintain student motivation and mathematical self-assurance from grade school through college.

In terms of Father's Educational Attainment

Table 8 reveals that the educational background of fathers fails to produce significant changes in students' mathematical learning attitudes based on the .704 p-value. Children whose fathers acquired college degrees display equal mathematical attitudes compared to those whose fathers did not finish college education. Other elements affecting student mathematics attitudes prove more significant than their father's educational level, since this variable fails to reach statistical significance. The research outcomes show that parents' educational background fails to generate automatic attitudes toward mathematics learning. The collected data demonstrate that students tend to create mathematical attitudes regardless of their fathers' educational level, despite common perceptions that parents with higher schooling help students more with academics. Outside influences, including academic settings and students' inner drive, might better explain the process of learning attitude formation rather than parental education levels.

Table 8. *Differences between fathers' educational attainment regarding attitude towards learning Mathematics*

Variables	Mean	t	P	Remarks
Did not go to college	3.00	0.40	.704	Not Significant
Went to college	2.83			

The research data supports Idris et al. (2020), which showed that uneducated parents follow equivalent academic paths for their children to parents who received an education. According to their research, parents from any educational background transmit academic decisions to their children through cultural preferences, societal standards, or personal morality instead of educational qualifications. The findings confirm that students do not automatically receive their mathematical attitudes from their fathers' educational level. Conflicting research results exist independent of these identified findings. Nelson (2009) determined that student academic performance and GPA significantly correlate with their fathers' educational attainment. The research showed that higher-educational fathers establish learning environments that build academic capabilities by participating directly in teaching activities or offering superior academic resources. He stated that indirect factors such as socioeconomic background and extra-school education opportunities remain connected to parental education levels because they contribute to student achievement outcomes. The educational achievements of students improve significantly when their fathers complete higher levels of education, specifically in mathematics subjects, according to McBride et al. (2009). The research established a link between fathers who achieve academic success and their tendency to support their offspring in their pursuit of academic success. According to the writers, students who have parents with higher education levels obtain structured motivational guidance from their parents to boost their mathematics engagement and confidence. Idris et al. (2020) demonstrated that parents who received formal education demonstrate the ability to choose effective academic routes for their children, thereby fostering improved chances of success. The study resulted in educational programmers implementing measures to provide training for parents with limited schooling since they showed the greatest need for learning how to help children advance academically. The study demonstrates how education influences long-term academic outcomes and professional selection, although it does not establish a direct link between school qualifications and mathematical perceptions. Research findings reveal that educators must discard the assumption that children from parents with fewer educational qualifications face inferior prospects of positive mathematical development. Schools must establish encouraging learning platforms that combine student involvement with confidence and practical mathematical content. The investigation discovered no direct connection between paternal educational attainment and mathematical attitudes, but existing research indicates that any parental participation in education supports student achievement independently of education levels. Educational institutions and government bodies

should launch home-based educational programs to teach parents about productive mathematics learning support. This helps all students get proper academic assistance regardless of their family circumstances.

In terms of Mother's Educational Attainment

Table 9 demonstrates that mothers' educational level impacts students' mathematical learning attitudes with statistical significance at .009. Student attitudes toward mathematics illustrate a positive bias when their mothers did not attend college compared to students whose mothers obtained a college degree. Data shows that parental education levels do not always lead to advanced academic motivation and encouraging student engagement. The unexpected relationship between students' mathematics interests and their mothers' education level might stem from students developing better independent learning behaviors, which drives them to pursue mathematics with more enthusiasm. Students with less educated mothers receive motivational backing from their mothers through various non-academic means, which builds positive educational attitudes. Students with college-educated mothers tend to face elevated academic demands that might induce pressure, producing pessimistic effects instead of a joyful mathematics experience. The research findings indicate that student learning attitudes differ complexly based on parental education level since academic benefits correlate more strongly than mathematical enthusiasm. A complete examination of parental effects must expand beyond academic training because it must incorporate aspects like emotional backing and motivational approaches, coupled with home education conditions.

Table 9. *Differences between mothers' educational attainment regarding attitude towards learning Mathematics*

Variables	Mean	t	P	Remarks
Did not go to college	3.00	0.57	.009	Significant
Went to college	2.83			

The findings of this study support Korupp et al. (2002), who demonstrated that parental education impacts student academic attitudes. The research indicated that parents establish the foundation of early child education, yet students subsequently create independent learning approaches that might not stem from their parents' educational background. Caputi et al. (2016) established that nurturing mother-child bonds helps students succeed academically; thus, emotional connections may matter more than education level when promoting academic engagement. Another body of research introduces alternative findings to this study. The research by Capuno et al. (2019) demonstrated that students with parents from educated families demonstrate superior academic achievements compared to those with uneducated family backgrounds, where the mother's education holds particular weight in student scholarship development. Higher education for mothers enables better academic direction while providing quality educational resources and learning-friendly home structures, leading to successful student outcomes. According to Korupp et al. (2002), children's educational accomplishments depend heavily on maternal educational achievement and labor market participation. The authors claim educated mothers actively support their children's academic growth while providing superior assistance for mathematics subjects. The obtained results from Table 9 differ from this perspective as additional variables potentially influence students' mathematical attitudes within the study context.

Results demonstrate that educators must avoid drawing broad conclusions about positive mathematical learning attitudes among students whose parents possess advanced educational levels. The academic field should acknowledge that student motivation and mathematics attitudes result from multiple influences extending beyond parental educational attainment, which also covers emotional backing from mentors and peer influences, together with classroom settings. Students with mothers with advanced degrees reportedly need distinct motivational approaches to enhance their positive perspective of mathematics. Educational institutions must establish methods to diminish the academic burden on their staff members. However, they shall continue providing personalized learning methods and stimulating mathematical interest to protect from developing adverse mindsets due to demanding expectations. Additional educational support programs with focused resources and guidance offer the most benefit to students who have mothers without college degrees. Through this system, all students gain fair opportunities to build excellent mathematical abilities coupled with positive learning mindsets.

3.4 Performance of Grade 11 Students in Mathematics

In terms of the performance of grade 11 students in mathematics, Table 10 shows that 5.7% of the grade 11 students obtained a "did not meet expectations" performance as well as an "outstanding" performance; 57% had a "fairly

satisfactory" performance; 14.4% had a "satisfactory" performance in Mathematics and 17.2% obtained a "very satisfactory" performance. About 22 out of 35 grade 11 students have a level of mathematics performance that ranges from not meeting expectations to being satisfactory. This suggests that most grade 11 pupils are mathematically behind, as seen by their grades during the first quarter of the 2022–2023 academic year.

Table 10. *Performance of Grade 11 Students in Mathematics*

Level of Mathematics Performance	Frequency	Percent
Did not meet Expectations	2	5.70
Fairly Satisfactory	20	57.0
Satisfactory	5	14.4
Very Satisfactory	6	17.2
Outstanding	2	5.70
Overall	**35**	**100**

3.5 Relationship between Attitude and Performance in Mathematics

Results demonstrate that students' attitudes toward learning mathematics produce a statistically meaningful correlation ($p = .004$), affecting their mathematics achievement results. The research shows that students with favorable attitudes toward mathematics succeed academically better than their counterparts who lack a constructive mindset toward math learning. Strong mathematical ability belief causes students to adopt active learning practices, including problem-solving skills, which leads to superior academic outcomes. Negative attitudes among students lead to math anxiety, avoidance behaviors, and reduced motivation, which affects their academic outcomes. Evaluation results indicate that teachers must adopt educational methods that develop constructive mathematical attitudes in their students. Constructive mindset development combined with meaningful real-world math examples within positive classroom environments produces improved student perspectives on math, which results in better mathematical accomplishment.

Numerous studies in educational research have proven a connection between student opinions about mathematics and their academic results. Subia et al. (2018) and Karjanto (2017) independently verified that positive mathematical attitudes strongly predict better student achievement results. The study results demonstrate that having positive mathematics perceptions and strong confidence enables students to achieve better results in their subjects. According to Hwang and Son (2021), students' mathematics achievement depends heavily on their feelings toward the subject. Additionally, educators must establish practices that create positive mathematical mindsets by using interactive teaching methods with student collaborations and concrete connections between math and everyday experiences. The study by Rodriguez et al. (2019) presents an original gender-centered point of view. The study established that male students view mathematics without preconception, but female students frequently see their performance directly linked to their mathematical perceptions. Research indicates girls would most likely gain from participation in programs that enhance their math confidence levels while fighting stereotypes and supporting their active involvement in STEM fields.

4.0 Conclusion

The study results demonstrate the necessity of developing favorable student attitudes toward mathematics to boost academic achievement. Mothers' educational level significantly influenced students' mathematical attitudes, but gender and student age did not affect their perception of the subject. Parents need to be more active in helping their children with math education in the home setting. The high level of relationship between student attitudes and their academic results indicates better results when students develop positive mathematical perspectives. Educational institutions and teachers must establish practical educational programs linked with real-world scenarios and collaboration methods for student support to improve the learning experience and accessibility.

5.0 Contributions of Authors

Felimar M. Calingayan is the only author. She contributed to the conception phase, design process, manuscript editing, writing, data analysis, encoding, and manuscript revision.

6.0 Funding

I used my salary to pay the fees for this study.

7.0 Conflict of Interests

There is no conflict of interest.

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9.0 Reference

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