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Research Article

Relationships of Parental Involvement to Students' Mathematics Attitude and Performance

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ABSTRACT

Parental involvement remains an underexplored factor in understanding students' attitudes and performance in mathematics at the tertiary level. This study aimed to explore the relationships of parental involvement to students' mathematics attitude and performance. Utilizing a descriptive-correlational research design, data were gathered from 142 first-year students at Dr. Emilio B. Espinosa Sr. Memorial State College of Agriculture and Technology (DEBESMSCAT) Cawayan Campus through the Parental Involvement Scale and the Students' Attitude Towards Mathematics Questionnaire. Descriptive statistics and Spearman's rank correlation coefficient were used to analyze the data. Findings showed that parental involvement among respondents was at a moderate level (M=*12.81*), students exhibited a neutral attitude towards mathematics (M=*3.31*), and their performance in the subject was good (*M = 87.8*). The analysis did not reveal a significant correlation between the level of parental involvement and students' attitudes towards mathematics ($\rho = .07, p = .41$). However, a significant positive correlation was identified between parental involvement and students' performance in mathematics ($\rho = .23, p = .01$). In light of these findings, the study suggests that to improve students' performance in mathematics, parents may adopt a supportive role that also encourages independence. Educators are encouraged to implement engaging, student-centered teaching methods, while schools should enhance communication and involvement initiatives between parents and teachers. Future research is recommended to explore additional factors that may affect students' attitudes and academic success in mathematics.

Keywords: *Mathematics attitude, Parental involvement, Performance, Relationships*

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Introduction

Mathematics plays an important role in shaping students' academic performance and future opportunities across various fields such as science, technology, engineering, and education. Despite its importance, many students continue to struggle in learning fundamental mathematical concepts, which negatively affects their performance. As a result, improving mathematics proficiency remains a consistent goal among educators, curriculum developers, and policymakers.

Globally, mathematics performance has become a growing concern. The Programme for International Student Assessment (PISA) reported a significant decline in mathematics achievement, with average scores dropping compared to previous years. In particular, the Philippines ranked among the lowest-performing countries showing continuous challenges in mathematics education. This trend is also evident at the tertiary level where higher education institutions report difficulties among students especially those enrolled in programs requiring strong mathematical skills. In higher education institutions, high failure rates in mathematics-related courses have been observed among first-year college students.

Among the many factors influencing students' academic performance, parental involvement has been widely recognized as a significant contributor (Yonson, 2016; Benner et al., 2016). Parents support their children's learning through various means such as providing guidance (Mutodi, & Ngirande, 2014), encouragement, and creating a positive learning environment at home (Kumah & Wonu, 2022). These forms of involvement are believed to influence not only students' academic performance but also their attitudes toward learning. A positive attitude toward mathematics is associated with increased motivation, confidence and self-efficacy while negative attitudes often lead to anxiety and poor performance.

However, as students transition to higher levels of education, parental involvement tends to decline due to increased student independence. At the college level, parents are less directly engaged in their children's academic activities and their role shifts from direct supervision to providing emotional and motivational support. Despite this decline, Deslandes & Barma (2016) highlights that parental involvement may still play a crucial role in shaping students' attitudes and academic performance.

While numerous studies have examined the relationship between parental involvement and academic performance in primary and secondary education, there is limited research focusing on this relationship at the tertiary level. Specifically, there is a lack of empirical evidence examining how parental involvement relates to both mathematics attitude and performance among college students in DEBESMSCAT Cawayan Campus. This gap highlights the need for further investigation to better understand whether parental involvement continues to influence students' learning performance in higher education.

Thus, this study aims to examine the relationship between parental involvement, students' attitudes toward mathematics, and their academic performance in mathematics among college students. Specifically, it seeks to determine the extent of parental involvement in terms of parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community; assess students' attitudes toward mathematics; evaluate their academic performance; and explore the relationships among these variables. The findings of this study are expected to provide insights that may help educators and policymakers design strategies to enhance mathematics performance through appropriate forms of parental support, even at the tertiary level.

Significance of the Study

The findings of this research are important to the following:

Higher Education Institutions. This study provided crucial insights for higher education institutions (HEIs) in determining the effect of parental involvement on students' mathematics performance. These institutions could develop programs that promote parental involvement to address potential gaps in mathematics performance.

Teachers. Understanding the level of parental involvement that positively impacted

student performance helped teachers foster home-school partnerships. This led to improved communication with parents and the development of programs or activities that encouraged parental support.

Parents. This study raised awareness among parents about the impact of their attitudes and involvement on their children's mathematics performance.

Students. The study helped inspire students to take an active role in their learning by seeking guidance and support from their parents.

Researchers. This study served as a reference for future researchers interested in parental involvement, students' mathematics attitude and performance. Future studies could build upon this work by exploring parental involvement in other subjects, examining its long-term effects, or investigating cross-cultural differences in parental involvement strategies.

Scope and Limitation of the Study

The survey focused on the relationship of parental involvement to students' mathematics attitudes and performance, which were measured using a survey questionnaire. Parental involvement was divided into six categories: (a) Parenting, (b) Communicating, (c) Volunteering, (d) Learning at Home, (e) Decision-Making, and (f) Collaborating with the Community. Students' Attitude Towards Mathematics composed of the following constructs: interest in mathematics, anxiety towards mathematics, self-efficacy, intrinsic motivation and self-concept. Meanwhile, students' mathematics performance was assessed based on their grades in their mathematics subject. The survey was conducted from December 2024 to January 2025.

The survey respondents were limited to first-year students enrolled in DEBESMSCAT Cawayan Campus during the first semester. The final grade of students in the subject GE 4 – Mathematics in the Modern World was utilized.

Conceptual Framework

This presents the variables used in the study and its relationship towards each other. This includes the variables used in the research mainly: parental involvement, students' attitude towards mathematics and mathematics performance.

This study is grounded in the idea that parental involvement significantly contributes to students' performance in mathematics. As depicted in the conceptual framework, parental involvement serves as the central variable, relating two key areas: students' attitudes toward mathematics and academic performance.

The main variable utilized in the study is parental involvement. It was assumed that parents engaged in various activities across different subscales of parental involvement. Students were randomly selected to assess the extent to which they believed their parents demonstrated involvement in the six areas involved. This variable implies a linear relationship to both students' mathematics attitude and academic performance.

The second component was students' attitude towards mathematics which assessed five criterions: Interest in Mathematics, Anxiety Toward Mathematics, Self-Efficacy, Intrinsic Motivation and Self Concept. Students rated their attitudes using a five-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. This variable is correlated from parental involvement to test its relationship.

The third variable examined students' mathematics performance, which was measured using their grades in Mathematics in the Modern World. This dependent variable was analyzed in relation to parental involvement.

The fourth objective sought to determine the correlation between parental involvement and students' mathematics attitudes. Both parents and students responded to the Parental Involvement Scale to ensure measurement consistency. The correlation between students' perceptions of parental involvement and their mathematics attitude scores was analyzed.

The fifth objective aimed to analyze the correlation between parental involvement and students' mathematics performance. This was examined by correlating parental involvement with students' performance in Mathematics in the Modern World.

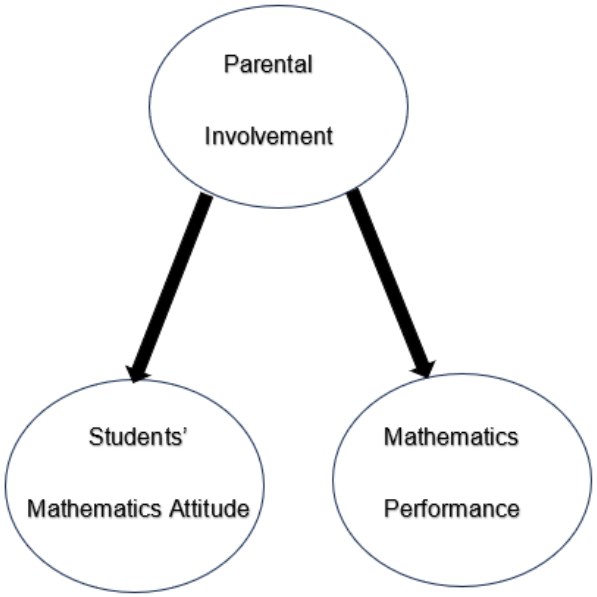

Fig. 1. Conceptual Paradigm

Review of Related Literature and Studies

Mathematics stands as a major academic discipline useful for students' educational and career opportunities. It emphasized the importance of mathematics as a subject as a skill and foundation to further learning at the university level. Success in mathematics is widely acknowledged as a key role of academic performance. Parental involvement which includes support, encouragement and actively participate with a child's learning activities primarily recognized as a significant factor to academic performance. Despite the fundamental research has been conducted on the influence of parental involvement in primary and secondary education, limited research findings account to its role at the tertiary level. This study aims to investigate the existing literature on the relationships among parental involvement, students' mathematics attitude and performance of college students.

Parental Involvement in Education

This study primarily focused on school based and home-based parental involvement that both directly and indirectly influence the academic performance of students.

School Based Parental Involvement is basically defined by the amount of interaction between the parents and teachers and participation in school activities of the child (Boonk et al., 2018). According to National Center for Education Statistics, the most common school-related activity that parents should do is attending a general school or parent-teacher organization or association meeting. This is also noted by (Bunijevac, 2017) who stated that involvement of parents is related to their participation in activities organized at school such as parent-teacher conferences, volunteer activities, various forms of parental activism, workshops and seminars for parents. This confirmed the findings of Benner et.al (2016) noting that the relation between parents' school-based involvement and students' educational attainment were significant. On the contrary, the benefits of school involvement are not clear (Boonk et al., 2018). This implies that when parent involvement seeks only attendance and participation in school activities, it does not significantly affect the children's academic achievement (Castro et al., 2015).

On the other hand, home-based parental involvement refers to what parents do at home to promote their children's learning (Boonk et al., 2018). According to Bunijevac (2017), involvement of parents is related to their position at home by monitoring the learning of children. It shows that student homework behaviors, perceived parental homework involvement, and academic achievement are significantly related (Núñez et al, 2015). Wilder (2023) emphasized

that the impact of parental involvement on student academic achievement was weakest if parental involvement was viewed as homework assistance. This is because home–family involvement is determined by multiple factors. The findings noted by Benner et al (2016) suggest that home-based involvement, including the provision of assistance with homework and school projects, may be less important for promoting academic achievement. Family involvement as a whole is not significantly related to performance. This is supported by the study of García et al. (2017) that there is no statistically significant correlation between home-based family involvement and school marks. Book et al. (2018) clarified that it is not clear how exactly parental homework involvement can be beneficial, because the relation between this type of involvement and academic achievement is inconsistent.

Furthermore, both home-based and school-based parental involvement contributes to effective communication in parent-adolescent relationships (Deslandes & Barma, 2016). In contrast, findings noted that parent-child and parent-school involvement practices differentially influence student attitudes and behaviors, thereby indirectly affecting student achievement to varying degrees (McNeal Jr, 2014). Parents are more involved at school and at home when they perceive that the schools have strong programs that encourage parent involvement.

Students' Mathematics Attitude

Attitudes vary in measures and definitions. According to Vargas-Sánchez et al. (2016), attitude refers to how a person perceives and evaluates something or someone as well as their tendency to respond either positively or negatively toward a particular idea, object, person, or situation. In the context of education, different attitudes manifested by students differ in every field and level of. The study by Hwang and Son (2021) supported earlier literature by describing students' attitude toward mathematics as a multidimensional construct consisting of components such as liking mathematics, valuing mathematics, and having confidence in mathematics. Findings from the study of Umac et al. (2025) revealed that students demonstrated moderately positive attitudes toward mathematics. They recognized its importance, but many showed low interest and confidence, and also experienced higher levels of anxiety when dealing with the subject. Similarly, Shakya and Maharjan (2023) confirmed that as students' attitudes become more positive their performance in mathematics tends to exhibit a similar increase.

Students' Academic Performance

According to Kumah & Wonu (2022), the performance of a student in school is important to the educational system for making informed decisions about the progress of the students. Academic performance is influenced by multiple factors (García et.al, 2017). It is usually measured through exams or ongoing assessments, but there is still no clear agreement on the best way to evaluate it (Assefa & Sintayehu, 2019). Nora'asikin Abu Bakar et al. (2021) believed that Student achievement is an indication of students' learning and mastery outcomes.

Concerns regarding the problem of unsatisfactory mathematics performance have been reported internationally (Brezavšček, et al., 2020). This may cause a further decline in learning tertiary mathematics as it was emphasized that underachievement in mathematics is greatly linked to insufficient mathematical background from secondary education (Rodrigo & Prudente, 2024). This suggests that parent physical and provisional absenteeism can influence student mathematics performance negatively even at the College level. However, there are many instances where students face challenges that influence their performance in Mathematics at all levels of education. (Kumah & Wonu, 2022). Mutodi & Ngirande (2014) concluded that there are significant differences in mathematics performance among students receiving different home and family support.

Relationship between Parental Involvement and Students' Mathematics Attitude

Researchers emphasized the association between parental involvement and students' mathematics attitude. Key findings from the study of Santillan & Bearneza (2023) revealed

that there was a significant relationship between parental involvement in learning mathematics and attitude of students. On the contrary, results from the study of Vasquez & Vasquez (2022) showed that there is no significant relationship between parental involvement in mathematics achievement and attitudes towards mathematics. Further research findings revealed from the study of Din et.al (2016) that provides evidence on the importance of family involvement as one of the significant contributors and explained 11.4% variance in students' mathematics engagement.

In conclusion, Hidayatullah & Csíkos (2024) added that other factors probably affect students' motivation, such as parents' involvement in students' learning. Also, Alorki et al (2024) inferred that parental involvement and support had a substantial influence on students' attitudes towards studying mathematics, especially at home.

Relationship between Parental Involvement and Students' Academic Performance

Parents and families have a major impact on the success of the process of education and upbringing of children (Akpuokwe et.al., 2024). According to Assefa & Sintayehu (2019), the impact of parental involvement on student academic achievement has been recognized by teachers, administrators, and policy-makers who consider parental involvement to be one of the integral parts of new educational reforms and initiatives. The Organization for Economic Cooperation and Development (2024) suggest that a significant enhancement in parental support and related child outcomes can be sought, especially in countries with lower average levels of parental emotional support. Research findings cited by Mutodi & Ngirande (2014) noted that parental involvement in educational activities significantly effects on children's academic achievement. This is supported by the result of Hanif & Alwi (2019) who stated that parents who are responsive to school and interactive with teachers, their children perform academically better rather than those who do not bother to come and meet teachers. This only implies that parents perform their role as partners of schools in the development of the children (Yonson, 2016).

Meanwhile, result shows that there are differences in children's academic achievement between the parental involvement profiles, indicating children whose parents have a low involvement have lower academic achievement (Lara & Saracostti, 2019). Home and family support is the most contributing predictor of students' mathematics performance (Mutodi & Ngirande, 2014). This is further supported by a study conducted in the Philippine setting by Anabo (2023) which found that home-related factors, including parental educational attainment, occupation, and availability of learning materials significantly influence students' mathematics performance. Another study supported by Hernández-Padilla et al. (2023), revealed that there are a positive and significant associations between parental schooling and achievement in mathematics. On the contrary, home-based parental involvement was unrelated to either GPA or educational attainment (Benner, Boyle & Sadler, 2016) which shows that parental involvement has a negative and significant relationship with mathematics achievement, indicating that increased parental involvement can reduce their children's mathematics achievement level (Nora'asikin Abu Bakar et al., 2021) The reverse was found for school-based involvement: parental involvement at school, including volunteering in the classroom and sending materials to school, improved children's academic skills, which in turn improved math performance for African American children (Boonk, et al., 2018). The meta-analysis of Jiang et al. (2023) revealed that supportive parental involvement such as providing guidance and autonomous support has a positive relationship with students' mathematics achievement, while intrusive involvement such as excessive control and interference negatively affects academic performance. Similarly, Bacskai et al. (2024) found that the impact of parental involvement is not the same in all situations but depends on the type of involvement provided. Their study showed that home-based involvement particularly helping with homework may have a negative effect on students' academic performance. On the other

hand, school-based involvement such as attending parent–teacher conferences were found to positively influence student achievement. These findings indicate that parental involvement is complex and its effect on academic performance largely depends on how parents engage in their children's learning.

The study Mahuro and Hungi (2016) found that parental involvement plays an important role in improving students' academic performance. They emphasized that learning should not be limited to the interaction between teachers and students alone, but should also involve active participation from parents. Similarly, recent intervention-based research shows that structured parental involvement can be especially effective in improving mathematics learning. Akindipe (2025) reported that when parents are actively engaged through home learning support, supervision, and regular communication with the school, students' mathematics performance significantly improves. This indicates that when parental involvement is properly guided and intentionally carried out, it can greatly enhance students' academic outcomes in mathematics. The existing literature underscores the significant, though often indirect, role of parental involvement in college students' mathematics achievement. This review suggests that while the nature of parental involvement changes at the tertiary level, its impact on student motivation, access to resources, and emotional support continues to shape academic outcomes.

The existing literature underscores the significant role of parental involvement in college students' mathematics achievement. This review suggests that while the nature of parental involvement changes at the tertiary level, its impact on student motivation, access to resources, and emotional support continues to shape academic performance. However, further research is needed to explore the differences of this relationship particularly in the context of higher education. While substantial research exists on parental involvement in K-12 mathematics performance, there is a notable gap in studies that focus on how this involvement continues to influence students' performance at the college level. More research is needed to understand how parents can effectively support their children's success in higher education mathematics without hindering their development of autonomy.

Materials and Methods

Research Design

The study employed a quantitative research method utilizing a correlational research design. The quantitative research method aimed to obtain accurate and reliable measurements, enabling statistical analysis (Queirós et al., 2017). Furthermore, the correlational research design measured the association between variables (Schober, Boer, & Schwarte, 2018). In this study, parental involvement, students' attitude towards mathematics and students' mathematics performance were measured, compared, and analyzed using appropriate statistical methods.

Respondents

The respondents were selected through total enumeration with 142 undergraduate students composed of 41 students from Bachelor of Elementary Education (BEED), 29 from Bachelor of Secondary Education (BSEd) major in English, 30 from Bachelor of Science in Industrial Technology (BSIT) major in Electronics and 42 from BSIT major in Electrical. The study included both students and their parents from Dr. Emilio B. Espinosa Sr. Memorial State College of Agriculture and Technology (DEBESMSCAT) Cawayan Campus. The undergraduate student respondents were first-year students enrolled in GE 4 – Mathematics in the Modern World.

Data Gathering Instrument

The measurement of variables in this study utilized validated questionnaires as the primary instruments, namely the Parental Involvement Scale and the Students Attitudes Toward Mathematics Questionnaire.

The Parental Involvement Scale, adapted from Abay-Abay et al. (2024), was employed to assess parental involvement. This instrument used a 5-point Likert scale consisting six subscales: (1) Parenting Level, (2) Communicating Level, (3) Volunteering Level, (4) Learning at Home Level, (5) Decision-Making Level, and (6) Collaborating with the Community Level. Each

subscale included four statements, evaluating both home-based and school-based parental involvement, for a total of 24 items. Respondents rated their parents' involvement on a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The questionnaire demonstrated strong internal consistency ($\alpha = 0.918$).

The Students Attitudes Toward Mathematics Questionnaire developed by Tahar et.al. (2010) was utilized in this study to measure students' attitudes toward mathematics. This instrument employed a 5-point Likert scale assessing five criterions: (1) interest in mathematics, (2) anxiety towards mathematics, (3) self-efficacy, (4) intrinsic motivation and (5) self-concept. Students selected the option that best described their attitudes toward mathematics learning using the scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The questionnaire comprised of 20 statements and demonstrated strong internal consistency ($\alpha = 0.875$).

Data Gathering Procedure

The data gathering procedure was carried out in the following steps: first, after the approval by the thesis committee, a request for the conduct of the survey in the target locale of the study was sent to the school administrator. The researcher sought expert advice regarding the appropriateness and validity of the questionnaires before distribution. Second, the survey questionnaires were administered through a face-to-face approach using total enumeration of the respondents. The accomplished questionnaires were retrieved immediately after administration to ensure completeness of responses. In addition to the survey data, the mathematics performance of the respondents was obtained from the Office of the Registrar in the form of official Grade Point Average (GPA), following the institutional grading system ranging from 1.0 to 5.0. To facilitate statistical analysis, particularly in examining the relationship among variables, the GPA values were transformed into their corresponding percentage grade equivalents based on the institutional grading conversion table. This transformation was performed to convert the data into a continuous numerical scale, which is more appropriate for correlation analysis. The use of percentage equivalents allowed for a more precise comparison and interpretation of students' mathematics performance while maintaining consistency with the institution's grading standards. Finally, the collected data were organized and encoded using Microsoft Excel. Statistical analyses were conducted using R Studio while Jamovi was used to analyzed the reliability of the instruments used.

Statistical Tools

This study employed various statistical methods, including descriptive statistics, assumption tests, and correlation analysis. Descriptive Statistics were used to summarize the data clearly and concisely (Alabi & Bukola, 2023). Ordinal data were analyzed using the mean. Tests of Assumptions were conducted to determine the suitability of the data for correlation analysis. The Shapiro-Wilk test assessed normality and set at a 5% level of significance. Finally, correlation analysis was applied to examine relationships between variables. Since the data did not satisfy the assumption of bivariate normality, Spearman's rank correlation was used to measure the strength and direction of associations between quantitative variables. All correlation tests were conducted at a 5% alpha level.

The Tables show the indicators of interpretation for parental involvement, attitudes towards mathematics and academic performance.

Table 1. Scale Range and Description of Parental Involvement

Range	Adjectival Description
16.81 – 20.00	Very High Involvement
13.61 – 16.80	High Involvement
10.41 – 13.60	Moderate Involvement
7.21 – 10.40	Low Involvement
4.00 – 7.20	Very Low Involvement

Table 2. Scale Range and Description of Students' Attitude Towards Mathematics

Range	Adjectival Description
4.21 – 5.00	Very High
3.41 – 4.20	High
2.61 – 3.40	Neutral
1.81 – 2.60	Low
1.00 – 1. 80	Very Low

Table 3. Grading Scale and Description for Mathematics Performance of College Students

Grade	Equivalent	Descriptive Rating
1.0	99-100	Excellent
1.1-1.9	90-98	Very Good
2.0-2.7	80-89	Good
2.8-3.0	75-79	Fair
5.0	Below 75	Failed

Validity and Reliability

The instruments utilized in this study were fully adopted from previously conducted research, and as such, are considered standardized survey questionnaires. Given their established validity in similar contexts, these instruments were considered appropriate and valid for use in the present study.

The table shows the reliability test results of the instruments used in the study namely: Parental Involvement Scale and Students Attitude towards Mathematics Questionnaire.

Table 2. Scale Reliability Statistics

Scale	Cronbach's α
Students Attitude Towards Mathematics Questionnaire	0.875
Parental Involvement Scale	0.918

Cronbach's alpha was calculated for both instruments to measure the consistency of responses across items within each subscale. The Parental Involvement Scale demonstrated strong reliability with α = 0.918, while the Students Attitude Towards Mathematics Questionnaire exhibited excellent reliability with α = 0.875, indicating that the instruments produced stable and consistent results.

Result and Discussion

Table 4. Extent of Parental Involvement

Subscale	Mean Scores	Adjectival Description
Parenting Level	14.99	High Involvement
Communicating Level	13.90	High Involvement
Volunteering Level	12.82	Moderate Involvement
Learning at Home Level	11.76	Moderate Involvement
Decision-making Level	10.80	Moderate Involvement
Collaborating with Community Level	12.56	Moderate Involvement
Average	**12.81**	**Moderate Involvement**

Using the descriptive statistics, mean scores of each subscale implies significant interpretation. Among the subscales, parenting level got the highest mean scores (14.99) and interpreted with high involvement. This suggests that parents are actively engaged in providing academic support to their children. Second-highest mean score (13.90) in

communicating level also indicating high involvement which means that parents maintain regular communication with their children about school and academic activities. The results describe that high parenting align the findings of Kantova (2024) who found that supportive parenting positively influences educational outcomes for children. Nora'asikin Abu Bakar et al. (2021) explained that meaningful communication between parents and students affects student engagement. Parents who provide support and maintain open communication help students navigate the challenges of college life agreed by Zhang and Bao (2024) who revealed that parent-student communication has a significant positive impact on academic adaptation. Furthermore, the study of Weintraub and Sax (2018) shed light on how students' frequency of and perceived satisfaction with parental interactions relate to their academic performance in the first year of college where majority of students reported feeling satisfied with the amount of communication with their parental figures. This is opposed by the studies of Schiffrin et al. (2014), who is against over-involvement which can lead to higher levels of depression, anxiety and lower levels of self-efficacy, leading to poorer college adjustment (Darlow et al, 2017). This emphasizes the need for parents to strike a balance between being supportive and allowing autonomy, fostering a nurturing environment without compromising the student's independence and psychological well-being.

Thus, educational institutions may consider programs that encourage healthy parent-student communication and involvement, while also guiding parents on how to provide appropriate levels of support to promote academic achievement and independence in college students.

Other subscales: Volunteering, Learning at Home, Decision-making, and Collaborating with Community Levels show moderate involvement, with mean scores ranging from 10.80 to 12.82. This suggests that while parents are involved, their participation in school-related activities, decision-making, and community collaboration is less evident. This may reflect the transition to college, where students are expected to take more responsibility for their academic and personal decisions. This is reinforced by Padilla-Walker et al (2019), who noted that college students increasingly seek independence in decision-making but Bhatia and Babu (2021) argued discussing that both parents and children need to be encouraged to collaborate and actively participate in career decision making process. Furthermore, the study of Erol and Turhan (2018) emphasized that when the number of visits of parents to the school increases, the support of the parents to the educational lives of their children also increases.

In general, considering all the subscales of parental involvement indicating a moderate involvement thus students view their parents' involvement in their college lives with a sense of balance as obtained from the study of Abay-Abay et al (2024). Findings of the study from Arshad et al (2016) revealed that majority of the students were in the favor of parents' involvement at university level but not exceeded influence of parents in choosing of courses of students. This is because involvement of parents should be viewed as a continuous process that has its evolutionary stages through childhood and adolescence, and is especially important in the periods of the transition of children from one to another level of studying (Bunijevac, 2017).

Institutions may consider implementing programs that educate parents on how to remain constructively involved without overstepping and help foster a healthy parent-student relationship that supports academic performance and personal growth.

Table 5. Students' Attitude Towards Mathematics

Variable	Mean	Adjectival Description
Interest in Mathematics	3.35	Neutral
Anxiety Toward Mathematics	2.88	Neutral
Self-efficacy	2.91	Neutral
Intrinsic Motivation	4.40	Very High

Variable	Mean	Adjectival Description
Self-Concept	2.99	Neutral
Average	**3.31**	**Neutral**

The study explored the students' attitude towards mathematics following the five constructs namely: interest in mathematics, anxiety toward mathematics, self-efficacy, intrinsic motivation and self-concept. Considering that the measures composed of both positive and negative statements, the scale 1-5 reflected for positive statements while 5-1 was used for negative statements. Students' interest in mathematics with mean score of 3.35 and interpreted as neutral suggests that students neither enjoy nor dislike mathematics. Research from Kosiol et al. (2019) indicated that personal interest in mathematics is a significant predictor of academic success, particularly during the transition to university-level mathematics as supported by the study of Mazana et al. (2018) also noted that the interest of students towards mathematics dropped at secondary level and maintained a similar trend in higher education that tend to most students do not have interest in mathematics as described by Arhin and Yanney (2020). However, Leyva et al. (2022) found that mathematics interest is a strong predictor of interest in STEM careers. Thus, it suggested also to find ways to enhance mathematics interest.

The subscale for anxiety towards mathematics indicating neutral which implied that students' anxiety toward mathematics displayed neutral responses. Students are neutral of feeling nervous, uptight, uneasy and confused when dealing with mathematics. Students feel stressed or uneasy about math. This is similar to the study of Gusmão et al. (2024) who mentioned that neutral stance towards mathematics may indicate a lack of anxiety, suggesting balanced self-efficacy and positive experiences with mathematical content and teaching methods. The study of Palmwood (2024) found out that neutral math anxiety is prevalent among college students, affecting their self-efficacy and performance in mathematics courses. Additionally, those with neutral anxiety may still struggle with negative feelings towards the subject (Szczygieł, 2023). Another study found that attitudes significantly mediate the relationship between motivated learning strategies and anxiety, suggesting that fostering positive attitudes can alleviate anxiety (Caputol & Chan, 2024).

The self-efficacy of college students as neutral suggested that students embody a mindset where success feels possible but uncertain, often influenced by context and perceived difficulty. Thus, somewhat they are confident in their ability to solve math problems when faced with easy tasks but could easily withdraw in the face of difficult and challenging math problems. This is reflected by the study of Iddrisu et al. (2023) who described that students' willingness to learn mathematics was the factor that had the greatest impact on students' mathematics performance. Findings from the study of Jameson and & Fusco (2014) found out that adult learners' self-report lower levels of math self-efficacy.

The intrinsic motivation with a mean of 4.40 indicating "very high" showed that students demonstrated a high level of internal drive in their academic pursuits. This result suggests that students are truly interested in learning, actively look for knowledge, and feel a sense of satisfaction in their studies. Because of this, they tend to be more engaged, keep going even when tasks are difficult, and stay committed to understanding the lessons deeply. Abay Abay et al. (2024) concluded that college students have moderate to high levels of academic motivation, mainly attributed to preparing for their chosen career and having good life in the future.

Lastly, the self-concept of college students with a mean of 2.99 suggesting a neutral response reflects a fair and objective view of oneself, fostering steady personal growth and resilience towards mathematics learning. According to Wang (2023) neutral self-concept allowed to help mitigate anxiety for students to engage more effectively with mathematical tasks. This is concluded from the findings of Anino (2015) that showed a positive correlation between self-concept and academic performance in mathematics, suggesting that

students with a neutral self-concept can achieve satisfactory results without the pressures of extreme self-expectations.

Overall, the students' attitude towards mathematics, as indicated by the average of 3.31, can be described as neutral. This implies that students did not exhibit strong positive or negative dispositions toward the subject. Mazana et al. (2018) explained that initially students exhibit a positive attitude towards mathematics, but the attitude of the students at a different age level showed a greater decline in attitudes as the students increase their grade level (Kunwar, 2020). The results imply that while students generally hold a neutral attitude toward mathematics, their potential is hindered by neutral anxiety and interest, and changing self-beliefs. Schools and teachers can improve learning by using well-rounded approaches such as math mentoring programs, teaching methods that match students' interests, and support systems that help students emotionally as well as academically in learning mathematics.

Table 6. Mathematics Performance of College Students

Variable	Mean	Adjectival Description
Grades	87.8	Good

The findings of mathematics performance of college students with a mean of 87.8 is described as good. This indicates that students demonstrate a good or corresponding satisfactory level of competence and understanding in mathematics. This supported the findings of Corda (2025) that the performance of first-year college students in Mathematics when taken as a whole and when grouped according to the demographics was satisfactory while Sabanal et al. (2024) explained that college students' performance in mathematics is shaped by both mental abilities and environmental factors with most students performing at a moderate to high level. Likewise, OECD (2023) reported that globally, students' mathematics performance generally falls within the average range, with fewer students reaching higher levels showing a common pattern of moderate achievement. However, Villegas et al. (2024) reported that most students performed at a very good level in mathematics and so only a few reached higher levels of achievement. In addition, Boonk et al. (2018) highlighted that academic performance is strongly linked to external support systems emphasizing that differences in students' performance may be influenced by the kind of learning environment and support they receive. This contradict to the result of Saha et al. (2024) who explained that rote learning is emphasized better than conceptual development in mathematics which leads to poor performance of college students.

This suggests that while most students have a strong understanding of mathematics, there is a room for improvement in helping them reach higher levels of performance. Although current teaching strategies and academic support systems appear to be effective in maintaining a good level of performance, additional instructional interventions may be necessary. Strategies such as differentiated instruction, enrichment activities, and advanced problem-solving tasks may help improve students' mathematical proficiency. Moreover, continuous monitoring of student progress and the use of formative assessments can support sustained improvement and promote higher academic performance in mathematics.

Table 7. Relationship between Parental Involvement and SATM

Variables	Spearman's ρ	p-value	Decision	Interpretation
Students' Attitude Toward Mathematics	0.06899516	0.4146	Failed to reject	Not Significant

The results indicate a very weak positive correlation ($\rho = 0.06899516$) between parental involvement and students' attitude towards mathematics. A p-value of 0.4166 suggests that

the relationship is not statistically significant. It indicates that parental involvement may have minimal or no direct relationship on students' attitude toward mathematics. Several studies contradicted the result as Santillan and Bearneza (2023) revealed that there was a significant relationship between the extent of parents' involvement and the level of attitude of the students towards Mathematics. Tang and Tran (2023) discussed that parental involvement generally supports positive attitudes while excessive expectations can lead to anxiety and negatively impact attitudes. Thus, balancing involvement with realistic expectations is crucial. Same findings from Modh Hanafiah and Rosly (2024) stated that active parental involvement, such as discussing mathematical concepts and assisting with homework, is linked to increased interest and better performance in mathematics. This engagement helps students develop a positive attitude towards the subject. Furthermore, Caparroso (2024) discussed strategies that involve parents in homework completion, such as creating study spaces and fostering autonomy helps improve attitudes towards mathematics by reducing stress and increasing confidence. Generally, Lerner et al (2022) found that parental involvement emphasizing autonomy support positively predicted students' intrinsic motivation, whereas controlling or drastic approaches had neutral or negative effects. This aligns with the with Self-Determination Theory (SDT) where students perform better academically when their needs for autonomy, competence, and relatedness are supported, particularly through positive parental involvement (Ryan & Deci, 2022).

This implies that not all parental involvement has the same impact in students' attitudes towards mathematics. Supportive, autonomy-promoting involvement is more beneficial than controlling behaviors. Educators and institutions should guide parents toward effective strategies that enhance student motivation and reduce pressure, fostering more positive attitudes toward mathematics.

Table 8. Relationship between Parental Involvement and Academic Performance

Variable	Spearman's ρ	p-value	Decision	Interpretation
Academic Performance	0.2276534	0.006436	Reject	Significant

The correlation coefficient ρ = 0.2276534 with a p-value of 0.006436 indicates a weak positive correlation between parental involvement and academic performance that is statistically significant at the 0.05 level. This suggests that as parental involvement increases, academic performance tends to improve slightly, but the strength of the relationship is not particularly strong.

Several studies show that parental involvement can help improve students' academic performance, which support the result of this study showing a weak but significant relationship. Esteban (2024) found that parents' expectations and regular communication about school help students perform better. In the same way, Dungca et al. (2024) reported that parental involvement improves students' behavior, attendance, and grades. Juguilon (2023) also noted that students who receive strong support from their families tend to do better in school. Similarly, Corcoro (2025) found a positive but weak connection between parental involvement, especially in checking and guiding learning at home, and students' performance. This suggests that parental involvement helps students, but it is not the main factor that determines their success.

However, some studies show different results. Calib-og and Cabigas (2023) found no connection between parental involvement and students' grades. Wang and Sheikh-Khalil (2014) also explained that not all types of involvement are helpful. For example, Robinson and Harris (2014) found that parents who are too controlling, especially in doing or checking homework, may not always help and can sometimes have negative effects.

These findings imply that schools and policymakers should shift the focus from simply increasing parental involvement to promoting effective involvement. Programs that educate parents on supportive practices like fostering

motivation, maintaining healthy communication, and encouraging autonomy may lead to more meaningful improvements in student performance particularly in mathematics.

Conclusion

Based on the findings, parental involvement is high in the areas of parenting and communication suggesting that parents are actively engaged in supporting their children's development and maintaining open lines of communication with schools. However, involvement in other key areas namely volunteering, learning at home, decision-making, and collaboration with the community remains at a moderate level. This suggests a need for schools and educational stakeholders to implement strategies that encourage and facilitate more active participation across these dimensions. Strengthening these areas of involvement could lead to more holistic support for student learning and development.

Furthermore, college students generally maintained a neutral attitude toward mathematics, showing neither strong positive nor negative feelings toward the subject. Despite this neutral disposition, students demonstrated good performance in mathematics. This suggests that while attitude may not be highly positive, it has not adversely impacted academic performance. However, fostering a more positive attitude toward mathematics could further enhance student engagement and potentially improve performance even further. Educational strategies that build interest, confidence, and appreciation for mathematics may be beneficial in this regard.

The negligible effect of parental involvement to students' attitudes toward mathematics suggests that while parental support remains valuable in other areas of a child's education, it may not play a significant role in shaping how students feel about mathematics. Although parental involvement contributes to a student's academic journey, its relatively weak correlation with academic performance suggests that other factors such as peer influence, instructional strategies, and individual learning experiences that play a more significant role in shaping educational outcomes.

To enhance students' mathematics attitudes and performance, parents are encouraged to extend their involvement beyond basic parenting and communication by actively participating in school activities, supporting home-based learning, and engaging in educational decision-making processes. Teachers should develop instructional strategies that consider students' diverse learning experiences, promote positive attitudes toward mathematics, and maintain regular, meaningful communication with parents to foster shared responsibility for students' academic growth. Schools are encouraged to establish programs that strengthen school–family collaboration through workshops, volunteer opportunities, and accessible resources that enable parents to support their children's learning more effectively. Given that parental involvement alone may not significantly influence students' mathematics attitudes or performance, future research should explore other contributing factors such as teacher effectiveness, student motivation, and peer dynamics.

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