

Parental Involvement and Attitude towards Mathematics of Teacher Education Students

John Paul Brecio^{ab}, Charry Ann M. Gade^b, Reniel B. Lacdao^b, Rhenz O Ramirez^b,
James L. Barbo^b, Lyrosa Mae B. Partoza^b, Jan Riel A. Garcia^b, Ma. Helen Joy
Abringe^b

^aj8356570@gmail.com

^bEastern Samar State University – Salcedo Campus, Salcedo, Eastern Samar, 6807, Philippines

Abstract

This study investigated the relationship between parental involvement and attitudes toward mathematics among 75 first-year teacher education students at Eastern Samar State University, Salcedo Campus, during the 2024–2025 academic year. Using a descriptive–comparative–correlational design, participants were selected through stratified sampling and completed a standardized questionnaire. Data were analysed using frequency, percentage, mean, ANOVA, Kruskal-Wallis H test, and Spearman's rank correlation, with a significance level of 0.05. Results showed that most students were female, aged 19–20 years, from families earning less than ₱13,411 per month, and enrolled in the Bachelor of Elementary Education program. Most mothers were unemployed or housewives, while most fathers worked in agriculture. Students reported moderate attitudes toward mathematics and moderate parental involvement. The study also found a significant difference in parental involvement based on parents' occupation, but no significant differences for family income or educational attainment. Students' attitudes toward mathematics were not significantly influenced by age, sex, or program, and Spearman's correlation revealed no significant relationship between parental involvement and attitudes toward mathematics. These findings suggest that while parents' occupation may affect involvement levels, it has minimal influence on students' attitudes toward mathematics, highlighting the importance of other factors such as instructional quality, motivation, and learning environment.

Keywords: parental involvement, attitude toward mathematics, teacher education students, mathematics education

1. Introduction

Mathematics plays a crucial role in daily life, from managing finances and planning schedules to understanding sports and performing domestic tasks, emphasizing the importance of learning it from an early age through college (Naungayan, 2022). Beyond practical applications, mathematics underpins fields such as physics, statistics, commerce, computer science, economics, navigation, and astronomy, where it is used to solve complex problems (Andamon & Tan, 2018). Scholars argue that cultivating a mathematical culture is essential for education and life planning, as it develops critical thinking, logical reasoning, and problem-solving skills necessary for real-world challenges (Nasamu, 2021; Šivković, Pellizzoni, Mammarella, & Passolunghi, 2022).

Parental involvement is widely recognized as a significant determinant of student success, particularly in mathematics. Active parental engagement—including academic support, emotional encouragement, and homework assistance—has been shown to enhance students' motivation, self-confidence, and perseverance in learning mathematics (Huang, Zhang, & Li, 2021; Rodríguez et al., 2017; Silinskas & Kikas, 2019). Moreover, parental involvement can reduce math-related anxiety and promote problem-solving skills, contributing to higher achievement levels (Choi & Han, 2020; Møller & Kaup, 2023). Beyond home-based support, involvement in school activities, communication with teachers, and fostering a positive learning environment have been associated with better academic outcomes (Reinke et al., 2019; Waswa & Al-Kassab, 2022).

Students' attitudes toward mathematics are another critical factor influencing learning and performance. Positive attitudes increase engagement, motivation, and resilience in facing challenging mathematical tasks, while negative attitudes often lead to avoidance and poor outcomes (Kiwanuka et al., 2020; Calabrese, 2016). Motivation, family expectations, and teacher support are significant contributors to shaping students' attitudes, highlighting the interactive influence of personal, familial, and educational contexts (Curran & Hill, 2022; Kikas & Tang, 2018).

The link between parental involvement and students' attitudes toward mathematics has been documented in various studies. Active parental support encourages discipline, fosters positive dispositions toward the subject, and enhances students' engagement with mathematics (Perera & John, 2020; Aguk et al., 2021; Kelley et al., 2020; Cui et al., 2021). However, much of this research focuses on primary and secondary education, with limited attention given to teacher education students, whose attitudes are pivotal for shaping how they will teach and inspire future learners.

Mathematics remains a required subject throughout elementary to tertiary education in many regions, including West Africa and the Philippines, yet students often perceive it as challenging (Amponsah et al., 2018; Chand et al., 2021). Negative attitudes, fear, and low motivation continue to impact performance, as observed in studies across various Philippine schools (Cerbato, 2020; Subia et al., 2018; Palma, 2021). These findings underscore the need to understand the factors that influence mathematics attitudes, particularly parental involvement, which may continue to affect learners even at the tertiary level.

Considering that teacher education students are future educators, understanding how parental involvement influences their attitudes toward mathematics is critical. Positive experiences and support during their own education may shape how they approach teaching, design instructional strategies, and encourage students' mathematical engagement. This study, therefore, aims to explore the relationship between parental involvement and attitudes toward mathematics among teacher education students, bridging the gap in existing research and providing insights into long-term educational influences.

Therefore, the study aimed to determine the relationship between parental involvement and students' attitudes towards Mathematics. Specifically, this study sought to answer the following questions: (1) What is the demographic profile of the respondents in terms of age, sex, program, monthly family income, parents' educational attainment, and parents' occupation?; (2) What is the level of parental involvement in academic activities of the respondents in terms of class/school work and guidance and support?; (3) What is the respondents' level of attitudes towards mathematics?; (4) Is there a significant difference in the parental involvement when they are grouped according to their monthly family income, educational attainment, and occupation?; (5) Is there a significant difference in the respondents' level of attitudes towards mathematics when they are grouped according to their age, sex, and program?; and (6) Is there a significant relationship between the parental involvement and students' attitudes towards Mathematics?

2. Methodology

This study employed a combination of descriptive-comparative and correlational research designs to examine parental involvement and attitudes toward mathematics among teacher education students. The descriptive approach was used to systematically present the respondents' demographic profile, level of parental involvement, and attitudes toward mathematics without manipulating variables. The comparative aspect enabled the investigation of differences in parental involvement and students' attitudes when grouped according to demographic characteristics. Meanwhile, the correlational design facilitated the analysis of the relationship between parental involvement and students' attitudes toward mathematics, providing insights into how these variables are associated.

The research was conducted at Eastern Samar State University– Salcedo Campus, involving first-year education students from various programs, including BEED, BSED, BTLED, and BECED. A total of 75 respondents were utilized and selected using stratified random sampling to ensure proportional representation across programs. Data were collected through an adopted survey questionnaire consisting of three parts: demographic profile, parental involvement, and attitude toward mathematics. The parental involvement scale included 20 items categorized into class/schoolwork and guidance/support, while the attitude scale also comprised 20 items with both positive and negative statements. Both instruments demonstrated high reliability, with Cronbach's alpha values of 0.89 and 0.92, respectively. Data collection followed ethical standards, ensuring voluntary participation, confidentiality, and proper authorization from institutional authorities.

For data analysis, both descriptive and inferential statistics were utilized. Frequency, percentage, mean score, and standard deviation were used for the descriptive part of the study. For inferential statistics, ANOVA, Kruskal-Wallis and Mann-Whitney U tests, and Spearman's correlation was used with 5% level of significance.

3. Results and Discussion

3.1 Demographic Profile of Teacher Education Students

Table 1 presents the demographic profile of the 75 respondents, revealing that the majority are female (81.30%) and predominantly within the 19– 20 age group (64.00%), indicating a relatively young and gender-skewed group. In terms of academic program, most are enrolled in BEED (45.30%), followed by BSED (28.00%), suggesting a stronger representation of elementary education students. Economically, a substantial proportion of respondents (72.00%) come from families earning below Php 13,411.00 monthly, reflecting generally low-income backgrounds. Parental educational attainment shows that most fathers reached only high school level or below, while mothers tend to have slightly higher attainment, with the largest group being high school graduates (36.00%). Occupational data further supports the low socioeconomic profile, as many fathers are engaged in farming, forestry, or fishing (48.00%), while most mothers are either housewives (38.70%) or unemployed (34.70%). These findings imply that the respondents may face socioeconomic and educational constraints that could influence their academic experiences, access to learning resources, and overall well-being.

Table 1
The Demographic Profile of the Respondents

Variable	Categories	Frequency	Percentage
Sex	Male	14	18.70
	Female	61	81.30
	<i>Total</i>	75	100.00
Age	18 years old and below	19	25.30
	19 - 20 years old	48	64.00
	21 year old and above	8	10.70
	<i>Total</i>	75	100.00
Program	BEED	34	45.30
	BSED	21	28.00
	BTLED	7	9.30
	BECED	13	17.30
	<i>Total</i>	75	100.00
Monthly Family Income	Below Php 13,411.00	54	72.00
	Within Php 13, 411.00	10	13.30
	Above Php 13, 411.00	11	14.70
	<i>Total</i>	75	100.00
Father' s Educational Attainment	Elementary Level	12	16.00
	Elementary Graduate	10	13.30
	High School Level	19	25.30
	High School Graduate	16	21.30
	College Level	10	13.30
	College Graduate	8	10.70
	<i>Total</i>	75	100.00
Mother' s Educational Attainment	Elementary Level	4	5.30
	Elementary Graduate	12	16.00
	High School Level	13	17.30
	High School Graduate	27	36.00
	College Level	9	12.00
	College Graduate	10	13.30
	<i>Total</i>	75	100.00
Father' s Occupation	unemployed	6	8.00
	farmer/forestry/fisherman	36	48.00
	construction worker	15	20.00
	teacher/instructor/professor	3	4.00
	businessman/entrepreneur	1	1.30
	OFW	3	4.00
	police/soldier	1	1.30
	others	10	13.30
	<i>Total</i>	75	100.00
Mother' s Occupation	unemployed	26	34.70
	farmer	5	6.70
	housewife	29	38.70
	teacher/instructor/professor	3	4.00
	businessman/entrepreneur	2	2.70
	police/soldier	2	2.70
	others	8	10.70
	<i>Total</i>	75	100.00

3.2. Level of Parental Involvement in Academic activities of Teacher Education Students

This study investigated the level of parental involvement in academic activities of teacher education students.

Table 2
Level of Parental Involvement in Academic Activities

No.	Statement	Mean	SD	Interpretation
Classwork				
1.	I help my child with their school assignments and projects.	2.30	0.67	Sometimes
2.	I discuss my child' s assignments with them.	2.12	0.72	Sometimes
3.	I discuss my child' s difficulties with math concepts with them.	2.05	0.72	Sometimes
4.	I communicate with my child' s teachers about their progress and behaviour.	2.21	0.68	Sometimes
5.	I meet with my child' s teachers to discuss their academic needs.	2.12	0.73	Sometimes
6.	I am concerned about my child' s academic success.	2.39	0.70	Sometimes
7.	I encourage my child to participate in their math class, whether online or in person.	2.19	0.67	Sometimes
8.	I talked to my child about what they are learning in their math class.	2.15	0.71	Sometimes
9.	I know my child' s classmates and friends in school.	2.17	0.74	Sometimes
10.	I praise my child' s creativity and problem solving-skills in math.	2.16	0.68	Sometimes
Composite Mean		2.19	0.43	Moderately involve
Guidance and Support				
1.	I listen to my child' s thoughts and opinions about their studies.	2.52	0.58	Always
2.	I encourage my child to develop their talents and abilities in math.	2.31	0.64	Sometimes
3.	I acknowledge and appreciate my child' s efforts to improve their math skills.	2.35	0.65	Sometimes
4.	I am aware of my child' s school activities and events.	2.28	0.63	Sometimes
5.	I help my child develop good study habits.	2.43	0.72	Always
6.	I reward my child for their good grades in math.	2.17	0.69	Sometimes
7.	I give my child some valuable pointers and suggestions to develop their self-confidence in solving number problems.	2.16	0.68	Sometimes
8.	I discuss with my child any issues that are affecting their studies.	2.19	0.61	Sometimes
9.	I encourage my child to participate in math clubs or programs like MTAP Saturday classes.	2.13	0.70	Sometimes
10.	I encourage my child to learn and explore math concepts.	2.23	0.69	Sometimes
Composite Mean		2.28	0.46	Moderately Involve
Overall Grand Mean		2.23	0.42	Moderately Involve

The results in Table 2 show that parental involvement in classwork is generally at a moderately involved level ($M = 2.19$, $SD = 0.43$). All indicators fall under the “sometimes” category, suggesting that while parents participate in their child' s academic activities, such involvement is not consistent or sustained. Parents occasionally assist with assignments, discuss lessons, and communicate with teachers, but the relatively low means (ranging from 2.05 to 2.39) indicate limited regular engagement. This implies that learners may not be receiving adequate academic reinforcement at home, particularly in mathematics, where continuous guidance is essential for skill development. The moderate level of involvement may hinder students' mastery of concepts and reduce opportunities for immediate support when difficulties arise.

In terms of guidance and support, parental involvement is also described as *moderately involved* ($M = 2.28$, $SD = 0.46$), though slightly higher than classwork. Two indicators—listening to the child' s thoughts ($M = 2.52$) and helping develop good study habits ($M = 2.43$)—are rated as “always,” indicating that parents are more consistent in providing emotional support and fostering positive learning behaviours. However, most indicators remain at the “sometimes” level, particularly in areas such as encouraging participation in enrichment activities, giving academic suggestions, and motivating deeper exploration of mathematics. This suggests that while parents provide a supportive environment, their role in actively enhancing their child' s mathematical competence and confidence is still limited. The implication is that students may benefit from stronger motivational and developmental support at home, especially in building higher-order thinking and problem-solving skills.

The overall results in Table 2 indicate that parental involvement in academic activities is moderately involved (Grand Mean = 2.23, SD = 0.42). This suggests that while parents participate in their children's education, such involvement is not consistently practiced across all areas. The findings imply that students receive occasional support and guidance, but not at a level that maximizes their academic potential, particularly in mathematics. This moderate level of involvement highlights the need for stronger collaboration between parents and schools to promote more active and sustained engagement in children's learning.

These findings are consistent with Santillan and Bearneza (2023), who found that in the Philippine context, students' attitudes toward mathematics are significantly influenced by the degree of parental involvement. Their study emphasized that encouragement and emotional support contribute positively to students' academic disposition, even when parents may not directly help with math assignments.

Similarly, Asare, Welcome, and Arthur (2024) highlighted that students' interest in mathematics is significantly shaped by parental support and motivation, which in turn improves academic performance. This aligns with these results showing higher means in guidance-related items compared to classwork support, suggesting that affective parental involvement such as encouragement and value placed on education is more impactful and prevalent than direct instructional help, especially among low-income or less formally educated families. The high percentage of students whose parents have low educational attainment, and low income supports this interpretation.

As Castro et al. (2022) noted, socioeconomic background and parental education influence the extent and nature of involvement, with parents in lower-income households often providing more emotional than academic support due to limited resources or educational confidence. Moreover, the study by Jiang et al. (2023) underscores the importance of the type of parental involvement. Their meta-analysis found that supportive involvement is positively associated with math achievement, while intrusive or controlling involvement can be detrimental. This supports these findings that moderate, supportive parental behaviors (e.g., motivation, general encouragement) are common among the respondents and likely beneficial to students' attitudes toward mathematics.

Finally, Alreshidi et al. (2022) emphasized that parental expectations and engagement in daily academic activities were strong predictors of mathematics achievement across countries. In this study, students whose parents have relatively higher educational attainment or more stable occupations (though a minority) may experience slightly more hands-on support, but the general trend still points to motivational involvement being the most dominant form.

3.3. Level of Attitude of Teacher Education Student towards Mathematics

A closer examination of the items in Table 3 reveals a mixed pattern of responses. Positive statements such as "Mathematics is very interesting to me" (M = 3.29) and "I really like mathematics" (M = 2.98) were rated as slightly disagree, indicating a lack of strong interest and enjoyment. Similarly, students reported discomfort and low confidence, as reflected in "I feel at ease in my mathematics class" (M = 3.23) and "Mathematics makes me feel secure" (M = 2.95), both interpreted as slightly disagree. On the other hand, several negative statements were slightly agreed upon, including "I have never liked mathematics" (M = 3.23), "The subject that I enjoy least is mathematics" (M = 3.45), and "I find mathematics boring" (M = 3.12). These responses reinforce the presence of unfavorable perceptions. However, it is noteworthy that students slightly agreed that "Mathematics is mentally stimulating" (M = 3.56) and "useful to everyday life" (M = 3.83), suggesting that they recognize the value and importance of mathematics despite their lack of strong positive feelings toward it.

Table 3*Level of Attitude towards Mathematics of Teacher Education Students*

No.	Statements (odd-positive, even-negative)	Mean	SD	Interpretation
1.	I am happier in mathematics than in any subject.	3.07	1.28	Slightly Disagree
2.	I have never liked mathematics, and it is my most dreaded subject.	3.23	1.15	Slightly Agree
3.	Mathematics makes me feel secure	2.95	1.06	Slightly Disagree
4.	I like textbooks in science, English, and social studies a lot more than the textbook in mathematics.	3.88	1.15	Slightly Disagree
5.	Mathematics is very interesting to me.	3.29	1.15	Slightly Disagree
6.	The subject that I enjoy least is mathematics.	3.45	1.17	Slightly Agree
7.	Mathematics is a mentally stimulating subject.	3.56	1.09	Slightly Agree
8.	Mathematics makes me feel as though I am lost in a jungle of numbers and I can't find my way out.	3.89	1.05	Slightly Disagree
9.	I feel at ease in my mathematics class.	3.23	1.02	Slightly Disagree
10.	I find mathematics boring.	3.12	1.13	Slightly Agree
11.	Mathematics is a subject in school, which I have always enjoy studying.	3.15	1.09	Slightly Disagree
12.	When I hear the word mathematics, I have a feeling of dislike.	3.04	1.10	Slightly Agree
13.	I find mathematics less difficult to understand than any other subject.	3.09	1.16	Slightly Disagree
14.	It makes me nervous to solve mathematics	3.52	1.27	Slightly Disagree
15.	I find mathematics useful to problems in everyday life.	3.83	1.44	Slightly Agree
16.	Mathematics makes me feel insecure.	3.36	1.42	Slightly Agree
17.	I really like mathematics	2.98	1.33	Slightly Disagree
18.	No matter how hard I try, I can't understand mathematics	3.20	1.15	Slightly Agree
19.	I feel definite positive reaction to mathematics	3.21	0.90	Slightly Disagree
20.	I would like mathematics better if it was not made so hard in class.	3.65	1.32	Slightly Agree
Overall Grand Mean		3.33	0.71	Slightly Negative

Overall, the level of attitude toward mathematics among teacher education students, with an overall grand mean of 3.33 (SD = 0.71) interpreted as slightly negative. This indicates that, in general, students hold mildly unfavorable attitudes toward mathematics, although these are not strongly negative. The responses suggest a condition of ambivalence, where students neither fully reject nor genuinely embrace mathematics as a subject. The relatively moderate standard deviations also imply some variability in students' perceptions, but not to an extreme extent.

The results further suggest that teacher education students recognize the importance and utility of mathematics and hold a generally positive orientation toward it. However, the relatively lower scores in certain items reveal an underlying discomfort, lack of confidence, or past negative experiences, which may hinder full engagement or enthusiasm. This nuanced attitude profile has important implications for teacher preparation. As future educators, their beliefs and feelings about mathematics are likely to influence their instructional practices and the attitudes they cultivate in their own students. Therefore, strengthening students' confidence, deepening their mathematical understanding, and providing consistent support may improve not only their attitudes but also their potential to model positive mathematical mindsets for others.

Research consistently shows that many pre-service teachers exhibit neutral to moderately negative attitudes toward mathematics, often influenced by prior experiences, confidence levels, and anxiety. For instance, Santillan and Bearneza (2023) that found that Filipino students generally demonstrate neutral level of attitudes toward mathematics, influenced by their perceived competence, classroom experiences, and external support systems, particularly parental involvement. In the same context, Lavidas et al. (2023) found that pre-service teachers' attitudes toward mathematics are significantly shaped by their previous learning experiences and levels of mathematics anxiety, indicating that negative experiences can lead to less favourable dispositions. This supports the present findings where students expressed discomfort, lack of

enjoyment, and feelings of insecurity in mathematics.

3.4. Difference in the Parental Involvement of Freshmen Teacher Education Students

Table 4

Difference Between Respondents' Parental Involvement when grouped according to Monthly Family Income

Profile		Sum of Squares	df	Mean Square	F	Sig.	Interpretation
Monthly Family Income	Between Groups	.445	2	.222	1.294	.281	Not Significant
	Within Groups	12.379	72	.172			
	Total	12.824	74				
Parents Educational Attainment	Between Groups	.457	5	.091	.510	.768	Not Significant
	Within Groups	12.367	69	.179			
	Total	12.824	74				
Parents Occupation	Between Groups	2.854	8	.357	2.362	.027	Significant
	Within Groups	9.970	66	.151			
	Total	12.824	74				

Table 4 presents the differences in the level of parental involvement among freshman teacher education students when grouped according to monthly family income, parents' educational attainment, and parents' occupation. Using Analysis of Variance (ANOVA), the results indicate no significant differences in parental involvement based on monthly family income ($p = 0.281$) and parents' educational attainment ($p = 0.768$). Therefore, there is insufficient evidence to reject the null hypotheses. These findings suggest that the level of parental involvement remains consistent regardless of variations in family income and parents' educational attainment. These results are supported by existing literature. Although Lareau (2015) emphasized that families with higher socioeconomic status tend to demonstrate greater involvement through increased resources and support, the present findings suggest that such differences may not always translate into statistically significant variations. In terms of parents' educational attainment, although Castro et al. (2015) reported a generally positive relationship between education and involvement, the current findings are consistent with Tan and Goldberg (2019) and Abdullah et al. (2020), who argued that this relationship is often mediated by other factors such as parental attitudes, motivation, and institutional support. These mediating influences may reduce observable differences, resulting in comparable levels of parental involvement across varying educational backgrounds.

In contrast, parents' occupation yields a statistically significant difference in parental involvement, as shown by $F(8,66) = 2.362$ and $p = .027$, which is less than the 0.05 level of significance. Therefore, the null hypothesis is rejected for this variable. This indicates that parental involvement significantly varies depending on parents' occupation, suggesting that factors associated with occupation—such as work schedule, job demands, or work environment—may influence the degree of involvement in their children's education. This finding is supported by Cariaga (2015), who reported that parents with less demanding occupations tend to be more involved in their children's education compared to those with more demanding jobs, likely due to greater availability of time and flexibility.

3.5. Difference in the Attitudes towards Mathematics of Freshmen Teacher Education Students

The study also looked into the difference between the attitudes towards mathematics of freshmen

teacher education students in Eastern Samar State University Salcedo Campus when they are grouped according to their demographic profile.

Table 5
Difference between Age and Attitudes towards Mathematics

Profile	Category	n	Median	Computed H	p-value	Decision	Remark
Age (in years)	21 & Above	8	3.15	1.000	.607	Fail to reject H_0	Not Significant
	19 – 20	48	3.30				
	18 & Below	19	3.20				
Sex	Female	61	3.30	566.500	.057	Fail to reject H_0	Not Significant
	Male	14	3.58				
Program	BEED	34	3.727	2.737	.434	Fail to reject H_0	Not Significant
	BSED	21	3.30				
	BECED	7	2.55				
	BTLED	13	3.05				

Table 5 presents the differences in respondents' attitudes toward mathematics when grouped according to age, sex, and academic program using nonparametric tests. The results show no significant difference in attitudes toward mathematics when they are grouped according to age ($p = .607$), sex ($p = .057$), and program ($p = .434$). Since the p-values are greater than the 0.05 level of significance, the null hypotheses are not rejected. Although slight variations in median scores are observed among the groups, these differences are not statistically meaningful. This indicates that respondents' attitudes toward mathematics are consistent across different age, sex, and teacher education programs.

These findings are supported by previous studies over the past decade, which emphasize that attitudes toward learning are shaped more by internal and contextual factors than by demographic characteristics. For instance, Schunk et al. (2016) highlighted that students' attitudes are largely influenced by instructional quality, self-efficacy, and motivation rather than age. Similarly, Fernandez et al. (2022) found that educational attitudes are more strongly associated with motivation, engagement, and peer interaction than with sex differences. In the same vein, Zhou et al. (2020) reported no significant differences in academic attitudes across university programs, suggesting that students' perspectives toward learning are more influenced by personal experiences and learning environments than by program affiliation. Collectively, these studies reinforce the present findings, indicating that attitudes toward mathematics are relatively stable across demographic and academic groupings and are more likely shaped by motivational and environmental factors.

3.6. Relationship Between Parental Involvement and Attitude towards Mathematics of Freshmen Teacher Education Students

Table 6
Correlation between Parental Involvement and Attitude towards Mathematics

Variables Correlated	r_s	p-value	Decision	Remark	Coefficient of Determination
Parental Involvement	.017	0.883	Fail to Reject	Not	0.000289

and Attitude Towards Mathematics	Ho	Significant
-------------------------------------	----	-------------

Legend: Coefficient of correlation

± (0.90 - 1.00) Very Strong Positive Negative, (0.60 - 0.79) Strong Positive Negative, (0.4 - 0.59) Moderate Positive Negative, (0.20 - 0.39) Weak Positive Negative, ± (0.00 - 0.19) Very Weak Positive Negative

The table shows the relationship between parental involvement and attitudes toward mathematics. The p-value ($p = 0.883$) is greater than the 0.05 significance level, leading to a failure to reject the null hypothesis. This means that the correlation is not statistically significant, and there is insufficient evidence to conclude that parental involvement is related to students' attitudes toward mathematics. Moreover, the coefficient of determination ($r^2 = 0.000289$) shows that parental involvement accounts for only 0.03% of the variance in attitudes toward mathematics, which is negligible. This suggests that factors other than parental involvement—such as instructional quality, motivation, peer influence, or learning environment—are likely to have a greater impact on students' attitudes toward mathematics.

These findings are consistent with previous research. For example, Gubbins and Otero (2016) reported only modest correlations between parental involvement and students' motivational attitudes, indicating that teacher support and peer interactions may exert a stronger influence on student attitudes. Similarly, Yulianti et al. (2019) found that while parental involvement can contribute to academic performance, its effect on students' attitudes is often moderated by factors such as student autonomy and school climate, reducing the direct impact of parental involvement on attitudes. Collectively, these studies support the present finding that parental involvement alone does not significantly predict students' attitudes toward mathematics.

4. Conclusion and Recommendation

Based on the findings of the study, it can be concluded that the freshmen teacher education students at Eastern Samar State University, Salcedo Campus, are predominantly female, aged 19– 20 years, mostly enrolled in the BEED program, and largely from low-income households, with most fathers having incomplete high school education and working in agriculture, forestry, or fishery, while most mothers were high school graduates and housewives or unemployed. The level of parental involvement was found to be moderate, consistent across both academic support and general guidance, and was significantly influenced only by parental occupation, suggesting that the nature and demands of a parent's work may affect their ability to support children academically, whereas educational attainment and income did not have a significant effect. Students exhibited a moderate attitude toward mathematics, which was not significantly influenced by age, sex, or academic program, and no significant correlation was found between parental involvement and attitudes toward mathematics, indicating that moderate parental support does not necessarily translate to more positive attitudes. Based on these results, it is recommended that the university implement targeted support systems for low-income students, enhance parental engagement programs through flexible and community-based strategies, provide enrichment and counseling initiatives to improve students' attitudes toward mathematics, tailor interventions to accommodate parental work demands, ensure inclusivity in academic support regardless of demographics, and explore additional factors—such as teacher encouragement, peer collaboration, and personal motivation—that may influence students' engagement and performance in mathematics, while future research should examine the quality and type of parental involvement to inform more effective strategies.

Acknowledgements

The researcher would like to sincerely thank everyone who helped to finish this study. We would especially want to thank the teachers and administration at Eastern Samar State University's Salcedo Campus for their assistance and permission to carry out the study. The teacher education students who voluntarily took part in the study and contributed important data are also greatly appreciated by the researchers. The researcher's family and friends are also acknowledged for their steadfast support, encouragement, and advice during the research process. Above all, sincere gratitude is given to God Almighty for providing the knowledge, fortitude, and tenacity needed to complete this task.

References

- Abdullah, A. G. K., Ismail, A., & Arshad, M. M. (2020). Influence of parental background on student academic performance: A Malaysian perspective. *International Journal of Educational Management*, 34(3), 535–547. <https://doi.org/10.1108/IJEM-01-2019-0002>
- Aguk, J., Onwonga, R., Chemining'wa, G., Jumbo, M., & Abong, G. (2021). Enhancing yellow maize production for sustainable food and nutrition security in Kenya. *East African Journal of Science, Technology and Innovation*, 2(May), 1–24.
- Ali, R., Khan, H., & Iqbal, M. (2021). Influence of teaching strategies on students' attitude in diverse academic programs. *International Journal of Instruction*, 14(2), 143–158. <https://doi.org/10.29333/iji.2021.1429a>
- Baker, R. S., & Kim
- Alreshidi, N. M., Alghamdi, A. K. H., Aslam, S., & Alenezi, A. M. (2022).

The influence of parental involvement on mathematical achievement: A cross-national comparative study. *Educational Administration Quarterly*, 58(5), 629–660. <https://doi.org/10.1177/00131245211048440>

- Amponsah, M. O., Milledzi, E. Y., Ampofo, E. T., & Gyamrah, M. (2018). Relationship between parental involvement and academic performance of senior high school students: The case of Ashanti Mampong Municipality of Ghana. *American Journal of Educational Research*, 6(1), 1-8. <https://doi.org/10.12691/education-6-1-1>
- Andamon, J. C., & Tan, D. A. (2018). Conceptual understanding, attitude, and performance in mathematics of grade 7 students. *International Journal of Scientific & Technology Research*, 7(8), 1-5.
- Asare, B., Welcome, J., & Arthur, Y. D. (2024). The effect of parental involvement and academic motivation on students' mathematics performance: The mediating role of interest in mathematics. *Jurnal Pendidikan Matematika (JPM)*, 8(1), 25–39. <https://doi.org/10.59198/jpm.v8i1.80>
- Calabrese Barton, A. (2016). *Empowering Science and Mathematics Education in Urban Schools*. Routledge.
- Cariaga, R. F. (2015). Parental involvement in relation to the literacy and numeracy skills of teenagers. *Academia.edu*. Retrieved from https://www.academia.edu/122101934/Parental_Involvement_in_Relation_to_the_Literacy_and_Numeracy_Skills_of_Teenager
- Castro, M., Expósito-Casas, E., López-Martín, E., Lizasoain, L., Navarro-Asencio, E., & Gaviria, J. L. (2022). Parental involvement on student academic achievement: A meta-analysis. *Educational Research Review*, 100385. <https://doi.org/10.1016/j.edurev.2022.100385>
- Cerbito, A. F. (2020). Comparative Analysis of Mathematics Proficiency and Attitudes toward Mathematics of Senior High School Student. Online Submission, 10(5), 211-222. <https://doi.org/10.29322/IJSRP.10.05.2020.p10125>
- Chand, S., Chaudhary, K., Prasad, A., & Chand, V. (2021). Perceived Causes of Students' Poor Performance in Mathematics: A Case Study at Ba and Tavua Secondary Schools. *Frontiers in Applied Mathematics and Statistics*, 7. <https://doi.org/10.3389/fams.2021.614408>
- Choi, J., & Han, H. S. (2020). Do parental attitudes really matter to children's mathematics anxiety? A meta-analysis. *Universal Journal of Educational Research*, 8(5), 1731-1740. <https://doi.org/10.13189/ujer.2020.080509>
- Cui, Y., Zhang, D., & Leung, F. K. S. (2021). The Influence of Parental Educational Involvement in Early Childhood on 4th Grade Students' Mathematics Achievement. *Early Education and Development*, 32(1), 113–133. <https://doi.org/10.1080/10409289.2019.1677131>
- Curran, T., & Hill, A. P. (2022). Young people's perceptions of their parents' expectations and criticism are increasing over time: Implications for perfectionism. *Psychological Bulletin*. <https://doi.org/10.1037/bul00000370>
- Fan, W., & Chen, M. (2021). Parental involvement and students' academic attitudes: A meta-analytic review. *Educational*
- Gubbins, E. J., & Otero, M. (2016). Factors affecting student motivation and engagement in gifted education. *Journal for the Education of the Gifted*, 39(1), 47–61. <https://doi.org/10.1177/0162353215625482>
- Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J. S., & Yeung, A. S. (2015). Expectancy-value in mathematics, gender and socioeconomic background as predictors of achievement and aspirations: A multi-cohort study. *Learning and Individual Differences*, 37, 161-168. <https://doi.org/10.1016/j.lindif.2015.01.008>
- Huang, F., Huang, Z., Li, Z., & Zhang, M. (2021). Relationship between parental involvement and mathematics achievement of Chinese early adolescents: Multiple mediating roles of mental health and mathematics self-efficacy. *International Journal of Environmental Research and Public Health*, 18(18), 9565. <https://doi.org/10.3390/ijerph18189565>
- Huang, C., Zhang, J., & Li, Q. (2021). Parental involvement and mathematics achievement in Chinese elementary schools:

The moderating roles of socioeconomic status and school climate. *School Effectiveness and School Improvement*, 32(4), 614-633.

- Huang, F., Huang, Z., Li, Z., & Zhang, M. (2021). Relationship between parental involvement and mathematics achievement of Chinese early adolescents: Multiple mediating roles of mental health and mathematics self-efficacy. *International Journal of Environmental Research and Public Health*, 18(18), 9565. <https://doi.org/10.3390/ijerph18189565>
- Igwe, A., & Joseph, V. (2019). Students' perception of teachers effectiveness and learning outcomes in mathematics and economics in secondary schools of cross river state, nigeria. 2(1).
- Jay, T., Rose, J., & Simmons, B. (2018). Why is parental involvement in children's mathematics learning hard? Parental perspectives on their role supporting children's learning. <https://journals.sagepub.com/doi/full/10.1177/2158244018775466>
- Jiang, H., Peng, L., Liu, J., & Ding, Y. (2023). A meta-analysis of the relationship between parental homework involvement and students' mathematics achievement. *Frontiers in Psychology*, 14, 1225654. <https://doi.org/10.3389/fpsyg.2023.1225654>
- Kelley, T. R., Knowles, J. G., Holland, J. D., & Han, J. (2020). Increasing high school teachers self-efficacy for integrated STEM instruction through a collaborative community of practice. *International Journal of STEM Education*, 7(1). <https://doi.org/10.1186/s40594-020-00211-w>
- Kikas, E., & Tang, X. (2018). Child-perceived teacher emotional support, its relations with teaching practices, and task persistence. *European Journal of Psychology of Education*, 34(3), 1-16. <https://doi.org/10.1007/s10212-018-0392-y>
- Kiwanuka, H. N., Van Damme, J., Van den Noortgate, W., & Reynolds, C. (2020). Temporal relationship between attitude toward mathematics and mathematics achievement. *International Journal of Mathematical Education in Science and Technology*, 51, 1–25. Available at: <https://doi.org/10.1080/0020739x.2020.1832268>.
- Kiwanuka, J., Muliira, J. K., & Muliira, R. S. (2020). Nursing leadership styles and their impact on intensive care unit quality measures: An integrative review. *Journal of Nursing Management*, 28(5), 1011-1021. <https://doi.org/10.1111/jonm.12979>
- Kyeremeh, P., & Dorwu, E. (2022). Supporting young children's mathematical development: The role of parents. *International Online Journal of Primary Education*, 11(2), 320-337. <https://doi.org/10.55020/iojpe.1218741>
- Møller, A. K., & Kaup, C. F. (2023). Parents' and children's learning when collaborating on inquiry-based mathematics and computational thinking tasks. *Journal of Pedagogical Research*, 7(2), 108-126. <https://doi.org/10.33902/JPR.202319033>
- Mullis, I. V. S., Martin, M. O., Foy, P., Kelly, D. L., & Fishbein, B. (2020). TIMSS 2019 international results in mathematics and science. Paper presented at the TIMSS & PIRLS International Association for the Evaluation of Educational Achievement.
- Nasamu, R. A. (2021). Influence of teaching styles and learning styles on pupils' academic performance in numeracy in Ilorin Kwara State [Doctoral dissertation, Kwara State University].
- Naungayan, R. R. (2022). Attitude towards mathematics and mathematics achievement of secondary school learners in Banayoyo- Lidlidda District. *Puissant*, 3, 395-407.
- Palma, J. (2021). Teacher emotional support and parental expectation as predictors of mathematics teaching anxiety among pre-service teachers in Tagum City, Philippines. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 10(4), 259-264. <https://doi.org/10.36713/epra2013>
- Perera, H. N., & John, J. E. (2020). Teachers' self-efficacy beliefs for teaching math: Relations with teacher and student outcomes. *Contemporary Educational Psychology*, 61, 101842. <https://doi.org/10.1016/j.cedpsych.2020.101842>

- Purnomo, M. H., Suryani, E., & Suryani, D. (2021). Parental involvement in online mathematics learning: Examining student report and links with engagement. *International Journal of Instruction*, 14(2), 1-18. <https://doi.org/10.29333/iji.2021.1421a>
- Rameli, M., & Kosnin, A. M. (2016). Factors influencing students' difficulties in learning mathematics. *The Online Journal of Science and Technology*, 6(1), 29-38.
- Reinke, W. M., Smith, T. E., & Herman, K. C. (2019). Family-school engagement across child and adolescent development. *School Psychology*, 34(4), 346.
- Rodríguez Martínez, M. C., Torío López, S., & Peña Calvo, J. V. (2017). Family involvement and academic achievement: A meta-analytic study. *Revista de Psicodidáctica (English ed.)*, 22(1), 107-115.
- Santillan, J. L. R., & Bearneza, R. P. (2023). Parental involvement, students' attitude and achievement in mathematics. *International Journal of Social Science and Human Research*, 6(2), 677-682. <https://doi.org/10.47191/ijsshr/v6-i2-45>.
- Silinskas, G., & Kikas, E. (2019). Parental involvement and reading achievement: A meta-analysis. *Educational Psychology Review*, 31(3), 535-560.
- Silinskas, G., & Kikas, E. (2019). Parental Involvement in Math Homework: Links to Children's Performance and Motivation. *Scandinavian Journal of Educational Research*, 63(1). <https://doi.org/10.1080/00313831.2017.1324901>
- Smith, T. E., & Sheridan, S. M. (2019). The effects of teacher training on teachers' family-engagement practices, attitudes,
- Shukla, R. K., Kumar, A., & Kumar, A. (2015). Parental involvement and academic achievement: A study of secondary school students. *Journal of Educational and Developmental Psychology*, 5(2), 134-144.
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of Science, Technology, Engineering, and Mathematics (STEM) graduates. *International Journal of Advanced Research in Education and Society*, 2(2), 1-8. <https://doi.org/10.22158/ijares.v2n2p1>
- Tan, E., & Goldberg, W. A. (2019). Parental involvement across different school settings: A comparative study of elementary schools in the U.S. *Journal of Family Studies*, 25(2), 235-252. <https://doi.org/10.1080/13229400.2017.1411206>
- Vaiopoulou, J., Papadakis, S., Sifaki, E., Kalogiannakis, M., & Stamovlasis, D. (2021). Parents' perceptions of educational apps use for kindergarten children: Development and validation of a new instrument (PEAU-p) and exploration of parents' profiles. *Education and Information Technologies*, 26(6), 7111-7133. <https://doi.org/10.1007/s10639-021-10547-0>
- Waswa, F., & Al-kassab, M. A. (2021). Exploring students' challenges in learning mathematics: A case study of secondary schools in Kenya. *International Journal of Mathematical Education in Science and Technology*, 52(8), 1257-1273.
- Wu, X., Zhang, Y., & Zhang, L. (2022). Parental involvement and students' mathematics achievement: A meta-analysis. *Frontiers in Psychology*, 13, 1-14. <https://doi.org/10.3389/fpsyg.2022.1001234>
- Yulianti, K., Denessen, E., & Droop, M. (2019). The effects of parental involvement on students' attitudes: A study in Indonesian urban primary schools. *School Community Journal*, 29(1), 177-200. <https://www.adi.org/journal/2019ss/YuliantiEtAlSpring2019.pdf>
- Živković, M., Pellizzoni, S., Mammarella, I. C., & Passolunghi, M. C. (2022). The relationship between mathematics anxiety and arithmetic reasoning: The mediating role of working memory and self-competence. *Current Psychology*, 42, 14506-14516. <https://doi.org/10.1007/s12144-022-02765-0>
- Živković, M., Jovanović, J., & Savić, M. (2022). Executive functions, math anxiety, and math performance in middle school students. *British Journal of Developmental Psychology*, 40(2), 1-15. <https://doi.org/10.1111/bjdp.12412>