Study Habits and Academic Performance in Mathematics of Freshmen Teacher Education Students

Delmark S. Caibog[ab], Marjurie B. Amado[b], John Aaron O. Ogking[b], John Erlix C. Agasa[b], Jeff Reign M. Bayudang[b], Iris Anne Casale[b]

[a] *delmarkcaibog@gmail.com*
[b] *Eastern Samar State University – Salcedo Campus, Salcedo, Eastern Samar, 6807, Philippines*

Abstract

The study aimed to determine the study habits and academic performance in mathematics of freshmen teacher education students at Eastern Samar State University, Salcedo Campus, during the School Year 2024–2025. Using descriptive-comparative and correlational research design, data was gathered using a standardized survey questionnaire from 88 respondents selected through complete enumeration. Mann-Whitney U test and Kruskal-Wallis H test were used for comparisons, while Spearman's rank correlation coefficient tested relationships between variables at 0.05 level of significance. The study revealed that most respondents were 18 years old or younger, predominantly female, single, and enrolled in the BEED program. Respondents exhibited an average level of study habits across domains including time management, physical status, note-taking, motivation, testing strategies, reading ability, memory, and health. Likewise, the respondents demonstrated a fair level of academic performance in mathematics, with no students achieving outstanding or excellent grades. Results showed no significant differences in study habits when grouped by age, sex, civil status, or course and specialization. Similarly, academic performance did not differ significantly by age or civil status; however, significant differences emerged according to sex and course and specialization. Lastly, study habits were found to positively influence academic performance in mathematics, explaining variation in achievement levels. The study recommends targeted workshops and programs to enhance freshmen students' study habits, equipping them with effective strategies to improve mathematics performance.

Keywords: Study Habits, Academic Performance, Teacher Education Students, Descriptive-Comparative, Descriptive-Correlational

1. Introduction

Mathematics is a vital subject in education, providing foundational skills for critical thinking, problem-solving, and analytical reasoning (Golding, 2018). It is essential for understanding and applying concepts across various fields such as technology, engineering, architecture, and research. Mathematics enhances reasoning abilities and supports personal development by fostering logical decision-making and practical applications in daily life. From managing finances to interpreting data and solving real-world problems, mathematics equips students with the necessary tools for academic success and professional growth (Hodanova & Nocar, 2016).

Despite its importance, mathematics is often perceived as one of the most challenging subjects for Filipino students (Capuno, 2019). Difficulties in grasping mathematical concepts, compounded by the need to adapt to various learning modalities, contribute to this challenge. In effect, student performance in mathematics frequently lags that of other subjects, leading to ongoing struggles for Filipino learners (Balbacal, 2023). The Philippines' poor performance in mathematics is underscored by its last-place ranking among 58

countries in the 2019 TIMSS study (Magas, 2023), with only 19% of Filipino students demonstrating basic mathematical skills (Magsumbol, 2020). Compared to 81 countries, the Philippines now ranks sixth lowest in both mathematics and reading, and third lowest in science. Based on the PISA test results, only 16% of Filipino students attained at least the basic or baseline level of proficiency in mathematics (Chi, 2023). Given such inadequate understanding, significant concerns are raised among parents, educators, and government officials. Although researchers have extensively examined the root causes of this low performance, the issue remains persistent (Odiri, 2015).

Teacher expertise in mathematics plays a crucial role in student learning outcomes. Studies indicate a strong correlation between a teacher's pedagogical content knowledge in mathematics and students' academic success (Tran et al., 2024). However, it is unrealistic to expect students to learn everything they need solely from classroom instruction; effective learning also occurs outside the classroom. Many students fail to engage with the material taught by their teachers and do not study at home due to a lack of recognition regarding the importance of study habits for academic achievement (Odiri, 2015).

Abalde and Oco (2023) highlight the significant role of study habits in shaping students' performance, particularly in mathematics. Rabia et al. (2017) further emphasize that effective study habits are essential for developing the knowledge and perceptual skills necessary for lifelong learning and achievement. Defined as consistent practices aimed at academic success (Trabajo, 2016), these habits are estimated to account for approximately 42% of academic achievement (Paramika, 2017). Research consistently demonstrates that cultivating effective study habits such as time management, note-taking, and structured routines leads to higher academic performance and holistic student development. For instance, Siahi & Maiyo (2015) found a strong positive correlation between these habits and academic achievement among high school students, while Sakirudeen & Sanni (2017) underscored their importance in improving mathematics outcomes.

Active learning strategies, such as self-quizzing and spaced learning, have been shown to enhance exam performance significantly (Walck-Shannon et al., 2021). Beyond academic success, good study habits foster motivation, self-discipline, and time management, contributing to personal growth (Bose, 2024; Fiorella, 2020). Febianti & Rezania (2024) also noted that these habits improve material retention and understanding, further enhancing learning outcomes. Collectively, these findings underscore the importance of intentional study practices including active learning, physical health, and motivation in driving academic success across various domains., and motivation in driving academic success across various domains.

Despite the recognized importance of effective study habits in achieving academic success (Rabia et al., 2017), their prevalence varies significantly among different student populations. Research indicates generally poor study habits among National University Manila freshmen (Cuizon et al., 2022), while students at the University of Bohol exhibit fair study habits that require improvement (Trabajo, 2016). In contrast, Cagayan State University students demonstrate moderate study habits but still require enhancement to boost their academic performance (Magulod Jr., 2019).

As a result, students with a lack of effective study strategies and poor study habits often develop weak mathematical foundations, hindering their understanding and obstructing academic progress (Odiri, 2015). Likewise, poor study habits result in poor performance in mathematics, which can impede advancement to higher grades (Mabena et al., 2021) and create ongoing challenges across other subjects reliant on mathematical skills (Barnes et al., 2016). Furthermore, developing poor study habits can lead to negative consequences such as poor time management, procrastination (Chukwu et al., 2022), test anxiety

(Numan & Hasan, 2017), low grades, diminished self-esteem (Effiom & Bassey, 2018), and a lack of attention in class (Alaraj et al., 2018).

With the above premises, the researchers wanted to conduct the study. Besides, determining the study habits of the respondents will contribute to evidence-based solutions that College of Education can use to develop practical programs, seminars, workshops, and resources aimed at improving academic performance in mathematics.

Therefore, the study aimed to investigate the relationship of study habits and academic performance in mathematics of the freshmen teacher education students in Eastern Samar State University Salcedo Campus. Specifically, it sought to answer the following questions: (1) What is the profile of the respondents in terms of age, sex, civil status and course and specialization?; (2) What is the level of study habits in mathematics of the respondents in terms of time management, physical status, note-taking, motivation, testing strategies, reading ability, memory and health?; (3) What is the level of academic performance in mathematics of the respondents?; (4) Is there a significant difference between the respondents' level of study habits when they are grouped according to their demographic profile?; (5) Is there a significant difference between the respondents' level of academic performance in mathematics when they are grouped according to their demographic profile?; and (6) Is there a significant relationship between the respondents' level of study habits and their level of academic performance in mathematics?

2. Methodology

A descriptive–comparative and correlational research design was employed in this study. The study was descriptive since it described the freshmen teacher education students in terms of their demographic profiles, level of study habits, and level of academic performance in mathematics. It was also comparative since significant differences in the respondents' study habits and academic performance in mathematics were tested when grouped according to their demographic profiles. Likewise, the study was correlational since it determined the relationship between the level of study habits and academic performance in mathematics. A total of 75 freshmen teacher education students were utilized in the study. The researcher selected students who are enrolled in the College of Education since they had logistical advantages arising from its accessibility.

Meanwhile, to gather the needed data, a standardized questionnaire was used in the study, adopted from Villa and Sebastian (2021). The questionnaire was structured into three parts. Part I gathered the demographic profile of the respondents, Part II evaluated the respondents' level of study habits specifically related to mathematics using a three-point Likert scale (Always or Mostly, Sometimes, Rarely or Never), and Part III assessed the respondents' level of academic performance in mathematics. The Study Habit Inventory Questionnaire (SHIQ) consists of 37 items organized into eight factors: time management, physical status, note-taking, motivation, testing strategies, reading ability, memory, and health. The instrument was found to be valid and reliable with Cronbach's Alpha of $\alpha = 0.705$.

Moreover, data were analyzed using frequency, percentage, mean scores, and standard deviation for the descriptive part of the study such as the demographic profile of the respondents, study habits, and academic performance in mathematics. Mann-Whitney U Test for differences based on sex and civil status, Kruskal-Wallis H Test for differences based on age and course and specialization, and Spearman Rank

Correlation Coefficient for testing the relationship between study habits and academic performance in mathematics. The level of significance was set to 5%.

3. Results and Discussion

3.1 Demographic Profile of the Freshmen Teacher Education Students

Table 1
The Demographic Profile of the Respondents

Variable	Categories	Frequency	Percentage
Age	23 years old and above	7	9.30
	21 – 22 years old	1	1.30
	19 – 20 years old	29	38.70
	18 years old and below	38	50.70
	Total	*75*	*100.00*
Sex	Male	18	24.00
	Female	57	76.00
	Total	*75*	*100.00*
Civil Status	Married	1	1.30
	Single	74	98.70
	Total	*75*	*100.00*
Course and Specialization	Bachelor of Elementary Education (BEED)	33	44.00
	Bachelor of Early Childhood Education (BECED)	7	9.30
	Bachelor of Secondary Education Major in English (BSED-Eng)	8	10.70
	Bachelor of Secondary Education Major in Mathematics (BSED-Math)	7	9.30
	Bachelor of Secondary Education Major in Science (BSED-Sci)	7	9.30
	Bachelor in Technology and Livelihood Education Major in Home Economics (BTLED-HE)	9	12.00
	Bachelor in Technology and Livelihood Education Major in Information and Communication Technology (BTLED-ICT)	4	5.30
	Total	*75*	*100.00*

As reflected in Table 1, it is worth noting that freshmen teacher education students at Eastern Samar State University Salcedo Campus are dominated by those 18 years old and below (38 or 50.70%) and 19-20 years old (29 or 38.70%), who are in the adolescent stage. In terms of sex, females account for 57 or 76.00%. Similarly, the programs are dominated by single students (74 or 98.70%), with the highest enrollment in BEED (33 or 44.00%), followed by BTLED-HE (9 or 12.00%) and BSED-Eng (8 or 10.70%). This distribution implies a predominantly young, female, single population with strong interest in elementary education programs among the respondents.

3.2 Study Habits of Freshmen Teacher Education Students

The study determined the level of study habits of the freshmen teacher education students in Eastern Samar State University Salcedo Campus in terms of time management, physical status, note-taking, motivation, testing strategies, reading ability, memory and health.

Table 2

Study Habits of Freshmen Teacher Education Students

No.	Statement	$\bar{x}$	σ	VD	LSH
Time Management					
1.	I study mathematics every day.	1.81	.485	S	A
2.	I study mathematics at a particular time of the day.	1.76	.516	S	A
3.	I do my homework in mathematics daily.	2.09	.640	S	A
4.	If I have to study mathematics for a longer time, I take rest in between.	2.20	.678	S	A
5.	I divide my time according to the matter to be answered with respect to the number of questions.	1.89	.583	S	A
	Composite	**1.95**	**.373**	**S**	**A**
Physical Status					
1.	I have all the required books and other relevant materials of study with me.	1.61	.543	R	L
2.	I easily get disturbed by the surroundings at the time of the study.	2.45	.684	A	H
3.	I develop an automatic interest in the lessons in mathematics as soon I start studying it.	2.00	.569	S	A
4.	I realized the importance of mathematics for my future career.	2.25	.617	S	A
5.	Other stray thoughts gradually flow in, as soon as I settle down for the study.	2.03	.519	S	A
6.	I think that I can improve fairly my study habits in mathematics.	2.09	.619	S	A
	Composite	**2.07**	**.360**	**S**	**A**
Note-Taking					
1.	During the classroom teaching in mathematics, I took down notes very sincerely.	2.09	.738	S	A
2.	At home, I compare my class notes with the notes from the textbooks in mathematics.	1.71	.712	S	A
	Composite	**1.90**	**.604**	**S**	**A**
Motivation					
1.	I take help from anybody if I do not follow anything.	2.27	.644	S	A
2.	I study mathematics at home thoroughly before it is taught in the classroom.	1.57	.574	R	L
3.	I attend my mathematics classes regularly on time.	2.49	.601	A	H
4.	I frequently remain absent from my mathematics class.	1.35	.533	R	L
5.	I try to make up for my deficiencies in mathematics.	1.97	.492	S	A
	Composite	**1.93**	**.324**	**S**	**A**
Testing Strategies					
1.	During examination days, I sleep as usual at night.	2.00	.637	S	A
2.	Before writing the answers to the questions in the mathematics examination. I read very carefully the entire question in the test paper.	2.44	.620	A	H
3.	In my mathematics examination, I answer the question in their serial order.	1.93	.577	S	A
4.	Before my mathematics examination, I read my own notes carefully.	2.23	.669	S	A
5.	I prepare for the examination in mathematics from the guides/notes available in the market.	1.69	.697	S	A
6.	I drew an outline of answers for each question before writing the answers to the questions in the examination.	2.00	.697	S	A
7.	I feel tense at the beginning of the examination.	2.45	.643	A	H
8.	After the examination, I realized that I had made some mistakes in the answers I had written, or I had forgotten some important points.	2.43	.640	A	H
9.	I carefully record my examination results in mathematics.	1.71	.632	S	A
10.	I singled out the difficult topic on the strength of my examination results.	1.88	.569	S	A
11.	I tend to compare my marks in mathematics with others after the results are declared.	1.88	.614	S	A
	Composite	**2.05**	**.390**	**S**	**A**
Reading Ability					
1.	I continue my reading despite the difficulties in understanding meaning of some of the Mathematical languages.	2.17	.645	S	A
2.	I study figures and graphs very carefully while reading.	2.03	.569	S	A
3.	I study in the library regularly.	1.60	.569	R	L
	Composite	**1.93**	**.410**	**S**	**A**
Memory					
1.	I try to recall the matter after reading it.	2.11	.764	S	A
2.	I crammed certain things without understanding.	1.95	.655	S	A
	Composite	**2.02**	**.478**	**S**	**A**
Health					
1.	I get disappointed if the examination result in mathematics is not favorable.	2.13	.759	S	A
2.	I get guidance about proper study habits from my mathematics teachers.	1.87	.684	S	A
3.	I will take advantage of a guidance program on study habits is arranged.	2.03	.677	S	A
	Composite	**2.00**	**.496**	**S**	**A**
	Overall	**2.00**	**.759**	**S**	**A**

Note:	**Mean Score**	**Verbal Description (VD)**	**Level of Study Habits (LSH)**
	2.34 – 3.00	Always or Mostly (A)	High (H)
	1.67 – 2.33	Sometimes (S)	Average (A)
	1.00 – 1.66	Rarely or Never (R)	Low (L)

Time Management. Table 2 indicates that respondents exhibited an average level of time management in their study habits, with a composite mean score of 1.95. This suggests that students sometimes engage in strategic allocation of study time, including daily math study, completing homework, taking breaks, dividing time according to task complexity, and maintaining fixed study schedules. This finding aligns with Mesfin and Gebremeskel (2023), who reported that teacher education students often take breaks but struggle

with consistent schedules. Similarly, Rața et al. (2022) found that education students are developing time management skills but study irregularly, despite recognizing its importance.

Physical Status. Respondents exhibited an average level of study habits in terms of physical status, with a composite mean of 2.07. Students sometimes get distracted by their surroundings, realize the importance of mathematics for their future careers, believe they can improve habits, experience stray thoughts, and develop interest in lessons, but rarely have all required materials. This indicates a moderate ability to manage distractions and focus, with room for better preparation. Swargiary (2023) emphasized that noise adversely affects cognitive skills, while Pérez-Juárez et al. (2023) highlighted those digital distractions further challenge concentration during study periods.

Note-Taking. The respondents demonstrated an average level of note-taking habits (mean = 1.90). They sometimes take notes diligently during math lessons and compare them with textbooks at home, showing proficiency in recording information but limited review for reinforcement. Salame and Thompson (2020) stressed that active notetaking enhances focus and comprehension, yet many students neglect post-class review. Supporting this, Salame et al. (2024) noted that although students take organized class notes, inconsistent cross-referencing with textbooks limits deeper retention.

Motivation. Study habits related to motivation were average (composite mean = 1.93). Students always or mostly attend math classes punctually, sometimes seeking help and address deficiencies, but rarely study lessons beforehand or are absent, reflecting moderate drive for learning. Hunter (2021) highlighted that autonomy and relevance in math boost punctuality and consistency, while Saadati and Celis (2023) emphasized that motivated students maintain regular attendance and low absenteeism to enhance engagement.

Testing Strategies. Students demonstrated an average level in testing strategies (mean = 2.05). They always or mostly feel tense during exams, read questions carefully, and recognize mistakes afterward, sometimes review notes, sleep normally, outline answers, answer in order, identify weak topics, compare marks, use market guides, and record results, reflecting varied self-regulated techniques. Biber (2022) reported that high achievers employ self-assessment and note review over external guides, while Makhambetova et al. (2021) emphasized goal setting, rehearsal, and self-evaluation as key to effective test preparation.

Reading Ability. Respondents showed an average level in reading ability (mean = 1.93). They sometimes persist through challenging mathematical language, study figures and graphs carefully, but rarely use the library regularly, indicating moderate comprehension skills. Kurniawan et al. (2023) emphasized that mathematical processing skills promote persistence, Stoll (2015) highlighted sustained problem-solving effort as predictive of performance, and Guterres et al. (2024) noted that library underutilization due to lack of motivation suggests a need for better resource strategies.

Memory. Study habits in memory were average (mean = 2.02). Students sometimes attempt to recall material after reading and occasionally cram without full understanding, showing moderate ability to retain and recall concepts. Xu et al. (2024) stressed that active recall enhances performance and self-efficacy, and Yuan (2022) highlighted that spaced practice outperforms cramming for long-term retention.

Health. Respondents showed an average level in health-related study habits (mean = 2.00). They sometimes feel disappointed by unfavorable exam results, receive guidance from teachers, and would utilize guidance programs if offered, reflecting moderate well-being that supports effective study. Piccirilli et al. (2023) reported that math anxiety negatively impacts skill acquisition, while Romano et al. (2021) emphasized the role of teacher emotional support in fostering resilience. Beilock and Maloney (2015) noted

that negative emotions hinder learning, highlighting the importance of guidance programs.

Overall Study Habits. The overall composite mean of 2.00 indicates that respondents generally engage in good study routines across all domains, yet there is room for improvement to enhance mathematics performance. Santos Jr. and Villarin (2023) emphasized that effective students typically engage in consistent notetaking, review, and memorization. Consistently prioritizing regular attendance and maintaining a conducive study environment with minimal distractions is crucial for optimizing learning outcomes (Banares, 2016).

3.3 Level of Academic Performance in Mathematics of Freshmen Teacher Education Students

Table 3
Level of Academic Performance in Mathematics of Freshmen Teacher Education Students

General Weighted Average	Verbal Description	Frequency	Percentage
1.60 – 2.00	Very Good	3	4.00
2.10 – 2.50	Good	17	22.70
2.60 – 3.00	Fair	52	69.30
3.10 – 3.50	Conditional	3	4.00
Total		*75*	*100.00*

Based on Table 3, it can be observed that the majority of the student-respondents, 52 or 69.30%, obtained final grades ranging from 2.60–3.00, which corresponds to Fair. Meanwhile, 17 or 22.70% of the respondents achieved final grades between 2.10–2.50, interpreted as Good. A smaller proportion, 3 or 4.00%, attained final grades within 1.60–2.00, classified as Very Good. Similarly, another 3 or 4.00% of the respondents received final grades ranging from 3.10–3.50, which fall under the Conditional category. This result suggests that freshmen teacher education students demonstrated a moderate level of mathematics proficiency, suggesting fundamental understanding of concepts but challenges with advanced problem-solving needed for teaching careers.

3.4 Difference in the Respondents' Level of Study Habits when grouped according to Demographic Profile

The study investigated the difference between the level of study habits of freshmen teacher education students in Eastern Samar State University Salcedo Campus when they are grouped according to their demographic profile.

The data in Table 4 reveals that no significant difference exists in the level of study habits among the respondents when they are grouped according to age ($p = 0.207$), sex ($p = 0.483$), civil status ($p = 0.053$), and course and specialization ($p = 0.066$). Thus, the data is not sufficient to conclude that a difference exists, failing to reject the null hypotheses. Hence, these students possess nearly equal levels of study habits.

In support of these findings, Prabowo et al. (2024) reported that age does not significantly influence reading habits. Similarly, study by Uslu and Korukcu (2021) emphasized that gender does not significantly influence students' study routines. Moreover, Jafari et al. (2019) indicated that marital status is not a determining factor in students' study habits, while Shahidi et al. (2015) confirmed that study skills remain generally consistent across academic programs.

Table 4
Difference in the Respondents' Level of Study Habits when grouped according to Demographic Profile

Variable	Categories	n	Median	Computed U/H	p-value	Decision	Remark
Age	23 years old and above	7	2.03	4.56	0.207	Fail to reject Ho	Not Significant
	21 – 22 years old	1	2.08				
	19 – 20 years old	29	2.14				
	18 years old and below	38	2.00				
Sex	Male	18	2.05	569.50	0.483	Fail to reject Ho	Not Significant
	Female	57	2.06				
Civil Status	Married	1	2.57	73.00	0.053	Fail to reject Ho	Not Significant
	Single	74	2.05				
Course and Specialization	Bachelor of Elementary Education (BEED)	33	2.08	11.81	0.066	Fail to reject Ho	Not Significant
	Bachelor of Early Childhood Education (BECED)	7	1.70				
	Bachelor of Secondary Education Major in English (BSED-Eng)	8	1.84				
	Bachelor of Secondary Education Major in Mathematics (BSED-Math)	7	2.19				
	Bachelor of Secondary Education Major in Science (BSED-Sci)	7	2.05				
	Bachelor in Technology and Livelihood Education Major in Home Economics (BTLED-HE)	9	2.08				
	Bachelor in Technology and Livelihood Education Major in Information and Communication Technology (BTLED-ICT)	4	1.81				

On the contrary, the results of the present study contradict the findings of Carrión-Barco et al. (2024) and Bentil et al. (2021), who reported that older students tend to demonstrate declining engagement in study habits and exhibit significant age-related differences in study behaviours. Furthermore, the present findings differ from those of Siswanto and Lika (2024), who found that marital status may enhance time management through effective role balancing. Lastly, the results also oppose the assertion of Magulod Jr. (2019), who emphasized that students' course and specialization influence study behaviours due to variations in learning styles and academic demands.

3.5 Difference in the Respondents' Level of Academic Performance in Mathematics when grouped according to Demographic Profile

The study also tested the difference between the level of academic performance in mathematics of freshmen teacher education students in Eastern Samar State University Salcedo Campus when they are grouped according to their demographic profile.

The data presented in Table 5 indicate that there are no significant differences in the academic performance in mathematics among the respondents when grouped according to age ($p = 0.560$) and civil status ($p = 0.400$). However, significant differences were observed when the respondents were grouped according to sex ($p = 0.001$) and course and specialization ($p = 0.008$). For the non-significant variables, the results suggest that the data are insufficient to conclude that differences exist; thus, the null hypotheses are not

rejected, indicating comparable levels of mathematics performance across age groups and civil status. In contrast, the significant results imply that female students performed better than male students, and that academic performance varied across programs or specializations. Overall, these findings suggest that mathematics achievement differs according to sex and course specialization but remains relatively consistent across age and civil status.

Table 5

Difference in the Respondents' Level of Academic Performance in Mathematics when grouped according to Demographic Profile

Variable	Categories	n	Median	Computed U/H	p-value	Decision	Remark
Age	23 years old and above	7	2.60	2.06	0.560	Fail to reject Ho	Not Significant
	21 – 22 years old	1	3.00				
	19 – 20 years old	29	2.70				
	18 years old and below	38	2.70				
Sex	Male	18	2.80	244.50	0.001	Reject Ho	Significant
	Female	57	2.35				
Civil Status	Married	1	2.40	14.50	0.400	Fail to reject Ho	Not Significant
	Single	74	2.70				
Course and Specialization	Bachelor of Elementary Education (BEED)	33	2.80	17.42	0.008	Reject Ho	Significant
	Bachelor of Early Childhood Education (BECED)	7	2.80				
	Bachelor of Secondary Education Major in English (BSED-Eng)	8	2.65				
	Bachelor of Secondary Education Major in Mathematics (BSED-Math)	7	2.30				
	Bachelor of Secondary Education Major in Science (BSED-Sci)	7	2.60				
	Bachelor in Technology and Livelihood Education Major in Home Economics (BTLED-HE)	9	2.90				
	Bachelor in Technology and Livelihood Education Major in Information and Communication Technology (BTLED-ICT)	4	2.90				

The findings of the present study are consistent with several previous investigations. For instance, Josiah and Adejoke (2015) found no significant differences in mathematics achievement across age groups. Similarly, Amuda et al. (2016) reported that marital status does not significantly influence academic outcomes. In terms of gender differences, Jiang (2021) confirmed that female students tend to outperform male students in mathematics. Moreover, Herrera (2021) found that course and specialization are significantly related to mathematics performance, suggesting that variations in academic programs may influence students' achievement. Likewise, Altujjar et al. (2016) demonstrated that program performance can predict future academic success through the development of consistent study practices.

However, these findings also contrast with several studies in the literature. For example, Amuda et al. (2016) and Unal (2019) identified age as a significant predictor of mathematics achievement. In addition, Maseka et al. (2024) reported that unmarried students tend to perform better academically than their married

counterparts. Meanwhile, Pascua et al. (2017) concluded that degree program does not significantly affect academic outcomes. Furthermore, Banares (2016) found no significant gender differences in academic achievement.

3.6 Relationship Between Level of Study Habits and Academic Performance in Mathematics of Freshmen Teacher Education Students

The relationship between the level of study habits and level of academic performance in mathematics was also investigated in this study.

Table 6
Correlation Between Level of Study Habits and Academic Performance in Mathematics of Freshmen Teacher Education Students

Variables Correlated	r_s	p-value	Decision	Remark	Coefficient of Determination
Level of Study Habits and Level of Academic Performance in Mathematics	0.336	0.003	Reject Ho	Significant	0.1129

Note: Coefficient of correlation rs: ± (0.80 – 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

As shown in Table 6, there is a significant relationship between respondents' level of study habits and their academic performance in mathematics ($p = 0.003$), leading to the rejection of the null hypothesis**.** This finding suggests that improvements in study habits are associated with modest increases in mathematics performanc**e**. However, only 11.29% of the variation **i**n academic performance can be explained by differences in study habits, indicating that other factors also contribute to students' outcomes.

These results are consistent with numerous studies demonstrating a positive relationship between study habits and mathematics achievement. For example, Odiri (2015) found that students with better study habits attained higher mathematics scores. Similarly, Guinocor et al. (2020) identified a significant positive correlation between study orientations and mathematics GPA, while Sakirudeen and Sanni (2017) reported strong links between time management, note-taking, and success in mathematics. Additional studies by Descargar and Cardona (2016) and Alimohamadi et al. (2018) confirmed that effective study practices significantly enhance academic outcomes.

4. Conclusion and Recommendation

The researchers conclude that the freshman teacher education students at Eastern Samar State University – Salcedo Campus exhibited average study habits and fair academic performance in mathematics, indicating potential areas for improvement in competencies related to effective learning and mathematics achievement. Given that the respondents demonstrated only average study habits, it is recommended that the university implement targeted workshops and remedial mathematics support programs, potentially in collaboration with BSEd Mathematics students, to enhance students' study routines and academic performance. Furthermore, the university may consider developing gender-sensitive strategies and program-specific interventions, complemented by a qualitative study to explore the underlying factors influencing study habits among students.

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References

Abalde, G. D., & Oco, R. M. (2023). Factors associated with mathematics performance. Asian Research Journal of Mathematics, 19(6), 45–60. https://doi.org/10.9734/ARJOM/2023/v19i6665

Alaraj, M., Kayal, H., & Banoqitah, E. (2018). An analysis into university students' bad lifestyle habits and their effect on academic achievement. Journal of Advances in Social Science and Humanities, 4, 430–441. https://doi.org/10.15520/JASSH412376

Alimohamadi, N., Dehghani, M., Almasi, S., Ashtarani, E., Jonbakhsh, F., Paymard, A., & Khalili, A. (2018). Relation study between study habit and academic performance of nursing students in Hamadan. Pajouhan Scientific Journal, 16(3), 29-38. https://www.researchgate.net/publication/327683319_Relation_study_between_study_habit_and_academic_performance_of_nursing_students_in_Hamadan

Altujjar, Y., Altamimi, W., Al-Turaiki, I., & Al-Razgan, M. (2016). Predicting critical courses affecting students performance: a case study. Procedia Computer Science, 82, 65-71. https://www.sciencedirect.com/science/article/pii/S1877050916300242

Amuda, B. G., Bulus, A. K., & Joseph, H. P. (2016). Marital status and age as predictors of academic performance of students of colleges of education in the North-Eastern Nigeria. American Journal of Educational Research, 4(12), 896–902. https://scispace.com/pdf/marital-status-and-ae-as-predictors-of-academic-performance-50wxy1g95a.pdf

Balbacal, J. B. (2023). Study habits and mathematics performance: Towards the development of a study. Instabright Gazette. https://uploads.strikinglycdn.com/files/c233dd63-69a4-4dd3-ad89-c23deaf80329/1409%20balbacal.pdf?t=1701230527&id=4077536

Banares, J. (2016). Study habits of BSA students at Technological Institute of the Philippines-Manila. https://www.scribd.com/document/329250610/study-habits-of-bsa-students-at-tip-manila

Barnes, M. A., Klein, A., Swank, P., Starkey, P., McCandliss, B., Flynn, K., … Roberts, G. (2016). Effects of tutorial interventions in mathematics and attention for low-performing preschool children. Journal of Research on Educational Effectiveness, 9(4), 577–606. https://files.eric.ed.gov/fulltext/EJ1115262.pdf

Beilock, S. L., & Maloney, E. A. (2015). Math anxiety: A factor in math achievement not to be ignored. Policy Insights from the Behavioral and Brain Sciences, 2(1), 4–12. https://journals.sagepub.com/doi/abs/10.1177/2372732215601438

Bentil, J., Kuranchie, A., & Ayisi-Boateng, H. (2021). Nature and determinants of study habits of undergraduate students. European Journal of Social Sciences Studies, 6(5). https://doi.org/10.46827/EJSSS.V6I5.1110

Biber, B. T. (2022). Self-regulated learning strategies used by students to prepare mathematics exams. International Journal of Progressive Education, 18(4), 223–238. https://eric.ed.gov/?id=EJ1352240

Bose, R. (2024). The relationship between study habits and academic performance among university students. International Journal for Research in Applied Science and Engineering Technology. https://doi.org/10.22214/ijraset.2024.59892

Capuno, R., Necesario, R., Etcuban, J. O., Espina, R., Padillo, G., & Manguilimotan, R. (2019). Attitudes, study habits, and academic performance of junior high school students in mathematics. International Electronic Journal of Mathematics Education, 14(3), 547–561. https://files.eric.ed.gov/fulltext/EJ1227082.pdf

Carrión-Barco, G., Remaycuna-Vasquez, A., Espinoza-Porras, F., Izquierdo-Marín, S., Rodríguez-Balcázar, S., Reyes-Pastor, G., & Heredia-Carhuapoma, N. (2024). Challenging stereotypes: Exploring the influence of sociodemographic factors and study habits on college students' academic achievement. Journal of Educational and Social Research. https://doi.org/10.36941/jesr-2024-0093

Chi, C. (2023, December 6). Philippines still lags behind world in math, reading and science — PISA 2022. Philippine Star. https://www.philstar.com/headlines/2023/12/06/2316732/philippines-still-lags-behind-world-math-reading-and-science-pisa-2022

Chukwu, N. W., Ezenwagu, S. A., Chime, G. O., & Nwogbo, M. O. (2022). Causes of poor study habit among secondary school students in Awgu local government area of Enugu state. African Journal of Educational Management, Teaching and Entrepreneurship

Studies, 5(1), 101–118. https://ajemates.org/index.php/ajemates/article/view/147

Cuizon, K. A. D., de Luna, F. Y. Z., Natividad, A. G. E., Ortiz, J. Z., Osorio, L. V., San Juan, K. B. T., & Punzalan, C. H. (2022). Learning style preferences, study habits, and academic performance in mathematics: Perspectives of freshmen college students amidst the COVID-19 pandemic. International Journal of Research in STEM Education, 4(2), 39-57.

Descargar, A. E., & Cardona, R. S. (2016). Revisiting the study habits and performance in math of Grade 7 students: A basis for a proposed enhancement program. Researchers World, 7(2), 77. https://www.semanticscholar.org/paper/revisiting-the-study-habits-and-performance-in-math-descargar-cardona/83a1ff722f08a5b19b40356011768adc4de12387

Effiom, B. E., & Bassey, B. A. (2018). Test anxiety, self-esteem and academic performance among secondary school students in Cross River State, Nigeria. International Journal of Education and Evaluation, 4(9), 18–27. https://www.researchgate.net/profile/bassey-effiom-2/publication/330468325_test_anxiety_self_esteem_and_academic_performance_among_secondary_school_students_in_cross_river_state/links/5c7c0d2c458515831f810ecd/test-anxiety-self-esteem-and-academic-performance-among-secondary-school-students-in-cross-river-state.pdf

Febianti, D., & Rezania, V. (2024). The effect of study habits on the learning outcomes of natural and social sciences (IPAS) at elementary school students. Edunesia: Jurnal Ilmiah Pendidikan. https://doi.org/10.51276/edu.v5i1.688

Fiorella, L. (2020). The science of habit and its implications for student learning and well-being. Educational Psychology Review, 1–23. https://doi.org/10.1007/s10648-020-09525-1

Golding, J. (2018). Mathematics education in the spotlight: Its purpose and some implications. London Review of Education, 16(3), 460–473. https://files.eric.ed.gov/fulltext/EJ1197125.pdf

Guinocor, M., Almerino, P., Mamites, I., Lumayag, C., Villaganas, M. A., & Capuyan, M. (2020). Mathematics performance of students in a Philippine State University. International Electronic Journal of Mathematics Education, 15(3), em0586. https://www.iejme.com/article/mathematics-performance-of-students-in-a-philippine-state-university-7859

Guterres, A., de Castro, B., & de Jesus, T. (2024). The influence of the school library on mathematics learning achievement of Grade III students in the first trimester at Escola Básica Central 3º Ciclo Vasco da Gama Manatuto in the 2014 academic year. Eduvest-Journal of Universal Studies, 4(8), 6844–6849. http://eduvest.greenvest.co.id/index.php/edv/article/view/1757

Herrera, M. (2021). Factors affecting the academic performance of Grade 11 students in general mathematics. ResearchGate. https://www.researchgate.net/profile/melody-herrera/publication/352934662_factors_affecting_the_academic_performance_of_grade_11_students_in_general_mathematics/links/60e04fb1a6fdccb74501fed7/factors-affecting-the-academic-performance-of-grade-11-students-in-general-mathematics

Hodanova, J., & Nocar, D. (2016). Mathematics importance in our life. In INTED2016 Proceedings (pp. 3086–3092). IATED. https://www.researchgate.net/profile/david-nocar/publication/298705287_mathematics_importance_in_our_life/links/56ebb39e08ae9dcdd82af3ad/mathematics-importance-in-our-life.pdf

Hunter, T. K. (2021). Developing motivation of adolescent mathematics students through instructional choice. https://digitalcommons.csumb.edu/caps_thes_all/1118/

Jafari, H., Aghaei, A., & Khatony, A. (2019). Relationship between study habits and academic achievement in students of medical sciences in Kermanshah-Iran. Advances in Medical Education and Practice, 637–643. https://www.dovepress.com/relationship-between-study-habits-and-academic-achievement-in-students-peer-reviewed-fulltext-article-AMEP

Jiang, P. (2021, July). Gender differences in mathematics academic performance of high school students in western China. In Journal of Physics: Conference Series (Vol. 1978, No. 1, p. 012038). IOP Publishing. https://iopscience.iop.org/article/10.1088/1742-6596/1978/1/012038/meta

Josiah, O., & Adejoke, E. I. O. (2015). Effect of gender, age and mathematics anxiety on college students' achievement in algebra. The Eurasia Proceedings of Educational and Social Sciences, 1, 57–61. https://dergipark.org.tr/en/pub/epess/issue/30314/332387

Kurniawan, D. A., Perdana, R., Widodi, B., Triani, E., Yathasya, D., & Fadillah, P. (2023). The persistence character and math processing skills of elementary school students in thematic learning. Jurnal Ilmiah Sekolah Dasar, 7(2), 363–373. https://www.researchgate.net/publication/372591434_the_persistence_character_and_math_processing_skills_of_elementary_school_students_in_thematic_learning

Mabena, N., Mokgosi, P. N., & Ramapela, S. S. (2021). Factors contributing to poor learner performance in mathematics: A case of selected schools in Mpumalanga province, South Africa. Problems of Education in the 21st Century, 79(3), 451. https://files.eric.ed.gov/fulltext/EJ1301930.pdf

Magas, J. (2023). Predictors of student's performance in TIMSS mathematics released items. Psychology and Education: A Multidisciplinary Journal, 6(11), 1. https://www.ejournals.ph/article.php?id=21022

Magsumbol, B. (2020). PH lowest among 58 countries in math, science – global assessment. https://www.rappler.com/nation/filipino-students-lagging-behind-math-science-timmsinternational-results-2019/

Magulod Jr, G. C. (2019). Learning styles, study habits and academic performance of Filipino university students in applied science courses: Implications for instruction. JOTSE: Journal of Technology and Science Education, 9(2), 184–198. https://upcommons.upc.edu/bitstream/handle/2117/134350/504-3078-1-PB.pdf?sequence=1

Makhambetova, A., Zhiyenbayeva, N., & Ergesheva, E. (2021). Personalized learning strategy as a tool to improve academic performance and motivation of students. International Journal of Web-Based Learning and Teaching Technologies (IJWLTT), 16(6), 1–17. https://www.igi-global.com/article/personalized-learning-strategy-as-a-tool-to-improve-academic-performance-and-motivation-of-students/286743

Maseka, L., Hong, J., & Wang, C. (2024). The relationship between attitude towards school and academic performance of students in Congolese higher education: The moderating role of marital status. Psychology. https://doi.org/10.4236/psych.2024.157065

Mesfin, A., & Gebremeskel, M. M. (2023). The practice of time management by Debre Markos College of Teacher Education students: Multitasking, procrastination, task prioritization, and technology use. Bahir Dar Journal of Education, 23(3), 102–120. https://www.ajol.info/index.php/bdje/article/view/249667

Numan, A., & Hasan, S. S. (2017). Effect of study habits on test anxiety and academic achievement of undergraduate students. Journal of Research & Reflections in Education (JRRE), 11(1). https://ue.edu.pk/jrre/articles/1101001.pdf

Odiri, O. E. (2015). Relationship of study habits with mathematics achievement. Journal of Education and Practice, 6(10), 168–170. https://files.eric.ed.gov/fulltext/EJ1081665.pdf

Paramika, F. A. (2017). The correlation between study habits and academic achievement of undergraduate EFL students of the English Education Study Program at UIN Raden Fatah Palembang (Doctoral dissertation, UIN Raden Fatah Palembang). http://eprints.radenfatah.ac.id/1125/1/Florensia%20Anggarde%20Paramika.pdf

Pascua, J. B., Navalta, J. D., Cruz, L. M. D., & Valderama, J. S. (2017). College academic performance of teacher education students in a state university of Northern Philippines. JPAIR Multidisciplinary Research, 9(1), 138–152. https://doi.org/10.7719/jpair.v9i1.10

Pérez-Juárez, M. Á., González-Ortega, D., & Aguiar-Pérez, J. M. (2023). Digital distractions from the point of view of higher education students. Sustainability, 15(7), 6044. https://doi.org/10.3390/su15076044

Piccirilli, M., Lanfaloni, G. A., Buratta, L., Ciotti, B., Lepri, A., Azzarelli, C., … Elisei, S. (2023). Assessment of math anxiety as a potential tool to identify students at risk of poor acquisition of new math skills: Longitudinal study of grade 9 Italian students. Frontiers in Psychology, 14, 1185677. https://doi.org/10.3389/fpsyg.2023.1185677

Prabowo, T. T., Marwiyah, Zain, L., Martias, L. D., Riani, N., Farhanah, N., & Sitthiworachart, J. (2024). Effect of demographic factors on reading habits: Study on Indonesian secondary school students. Journal of Librarianship and Information Science. Advance online publication. https://doi.org/10.1177/09610006241239078

Rabia, M., Mubarak, N., Tallat, H., & Nasir, W. (2017). A study on study habits and academic performance of students. International Journal of Asian Social Science, 7(10), 891–897. https://www.researchgate.net/publication/322206720_a_study_on_study_habits_and_academic_performance_of_students

Rața, B. C., Ciolcă, C., Butnariu, M., Rață, G., Rață, M., Drăgoi, C. C., … Mihăilescu, L. (2022). Building time management skills through the teaching practice activity. Revista Romaneasca Pentru Educatie Multidimensionala, 14(3), 88–100. https://doi.org/10.18662/rrem/14.3/244

Romano, L., Angelini, G., Consiglio, P., & Fiorilli, C. (2021). Academic resilience and engagement in high school students: The mediating role of perceived teacher emotional support. European Journal of Investigation in Health, Psychology and Education, 11(2), 334–344. https://doi.org/10.3390/ejihpe11020025

Saadati, F., & Celis, S. (2023). Student motivation in learning mathematics in technical and vocational higher education: Development of an instrument. International Journal of Education in Mathematics, Science and Technology, 11(1), 156–178. https://eric.ed.gov/?id=EJ1357187

Sakirudeen, A. O., & Sanni, K. B. (2017). Study habits and academic performance of secondary school students in mathematics: A case study of selected secondary schools in Uyo Local Education Council. Research in Pedagogy, 7(2), 283–297. https://www.ceeol.com/search/article-detail?id=598696

Salame, I. I., & Thompson, A. (2020). Students' views on strategic note-taking and its impact on performance, achievement, and learning. International Journal of Instruction, 13(2), 1–16. https://eric.ed.gov/?id=EJ1249102

Salame, I. I., Tuba, M., & Nujhat, M. (2024). Note-taking and its impact on learning, academic performance, and memory. International Journal of Instruction, 17(3), 599–616.

Santos Jr, F. C., & Villarin, S. J. B. (2023). Factors affecting study habits of grade 6 pupils in Kalangahan Elementary School. Online Submission, 10(2), 123–136. https://eric.ed.gov/?id=ED633601

Shahidi, F., Dowlatkhah, H. R., Avand, A., Musavi, S. R., & Mohammadi, E. (2015). A study on the quality of study skills of newly-admitted students of Fasa University of Medical Sciences. Journal of Advances in Medical Education & Professionalism, 2(1), 45. https://pmc.ncbi.nlm.nih.gov/articles/PMC4235533/

Siahi, E. A., & Maiyo, J. K. (2015). Study of the relationship between study habits and academic achievement of students: A case of Spicer Higher Secondary School, India. http://erepository.kibu.ac.ke/handle/123456789/948

Siswanto, J. E., & Lika, C. (2024). Relationship between APGAR score, preterm asphyxia, and initial blood gas post-resuscitation. Academia Medicine, 2(1). https://doi.org/10.20935/AcadMed7565

Stoll, D. M. (2015). Persistence and problem solving. SUNY Open Access Repository. https://soar.suny.edu/handle/ehd_theses

Swargiary, K. (2023). The impact of study environment on students' academic performance: An experimental research study. Authorea Preprints. https://www.techrxiv.org/doi/full/10.36227/techrxiv.170250911.12566888

Trabajo, F. M. (2016). Study habits profile of first year college students of the University of Bohol. ACADEME University of Bohol, Graduate School and Professional Studies, 9(1), 28–36. http://ub-urc.ph/index.php/aubgsps/article/download/81/82

Tran, T., Nguyen, T. P. T., & Nguyen, B. N. (2024). Analysis of factors influencing poor performance in mathematics of high school students: Case study in Vietnam. In Proceedings of the 15th International Conference on Society and Information Technologies (ICSIT 2024). https://www.iiis.org/CDs2024/CD2024Spring/papers/EB509RZ.pdf

Unal, A. (2019). The Impact of Relative Age Effect on Mathematics Achievement. International Education Studies, 12(6), 39-55. https://eric.ed.gov/?id=EJ1217304

Uslu, S., & Körükcü, M. (2021). A mixed analysis on the study habits of middle school students. Journal of Education and Learning,

10(3), 140–148. https://eric.ed.gov/?id=EJ1300241

Villa, E. A., & Sebastian, M. A. (2021). Achievement motivation, locus of control and study habits as predictors of mathematics achievement of new college students. International Electronic Journal of Mathematics Education, 16(3), em0661.

Walck-Shannon, E. M., Rowell, S. F., & Frey, R. F. (2021). To what extent do study habits relate to performance? CBE—Life Sciences Education, 20(1), ar6. https://www.lifescied.org/doi/abs/10.1187/cbe.20-05-0091

Xu, J., Wu, A., Filip, C., Patel, Z., Bernstein, S. R., Tanveer, R., ... & Kotroczo, T. (2024). Active recall strategies associated with academic achievement in young adults: A systematic review. Journal of Affective Disorders. https://www.sciencedirect.com/science/article/pii/S0165032724004245

Yuan, X. (2022). Evidence of the spacing effect and influences on perceptions of learning and science curricula. Cureus, 14(1). https://www.cureus.com/articles/81442-evidence-of-the-spacing-effect-and-influences-on-perceptions-of-learning-and-science-curricula.pdf