Teachers' Classroom Management, Students' Attitude and Home Environment: Predictors of Mathematics Performance

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ABSTRACT

Mathematics performance is vital to students' academic progress. This quantitative study investigated the predictors that influenced students' performance in Mathematics, specifically the teachers' classroom management, students' attitudes, and their home environment. The sample size of 160 was drawn from a population of 272 and calculated using Raosoft sample size calculator, and purposive sampling was used to distribute questionnaires to students. The researchers used the descriptive-correlational research design. The researchers utilized three questionnaires to assess factors affecting students' performance: the Teachers' Classroom Management Questionnaire (with a Cronbach's alpha of 0.915), the Students' Attitude Questionnaire (with a Cronbach's alpha of 0.963), and the Students' Home Environment Questionnaire (with a Cronbach's alpha of 0.920). Additionally, students' grades were also used as instrument. The statistical methods in the study were Mean, Standard Deviation, Frequency, Percentage, Pearson Product-Moment Correlation Coefficient, and Stepwise Multiple Regression Analysis. The teacher's classroom management was very good, students had positive attitudes and a good home environment, but mathematics performance was very poor. The teachers' classroom management was not related to students' performance in Mathematics. The students' attitude was related to their performance in Mathematics in terms of value and self-efficacy. Additionally, it was found that there was no significant relationship between students' home environment and their performance in Mathematics. The teachers' planning and students' value were the significant predictors of students' performance in Mathematics. It was recommended that teachers prioritize well-prepared instruction and foster an understanding of the value of mathematics among students.

Keywords— academic achievement, classroom management, home environment, mathematics performance, students' attitude

INTRODUCTION

Mathematics performance plays a vital role in students' academic progress and has important effects that go beyond the classroom. In solving mathematics problems, students must be able to comprehend the problems at hand, consider them from multiple perspectives, and refrain from rigid thinking when it comes to choosing a solution (Rahayuningsih et al., 2020). However, students may occasionally find these processes to be a hassle. Mathematics is one of the most challenging and disliked subjects among students all around the world, including those in the Philippines (Capuno et al., 2019). It is frequently seen by

students as being difficult to grasp and master in class (Siaw et al., 2021). More than 50% of Filipino students scored below the lowest proficiency level on the 2018 Programme for International Student Assessment (PISA) test's mathematics section, which shows how poorly they performed (Bernardo et al., 2022).

Classroom management is one of the factors influencing students' performance. Effective teaching methods, teacher motivation, and classroom discipline are patterns of classroom management strategies that could improve students' academic achievement in mathematics (Ohanyelu, 2021). In their mathematics classrooms, teachers should foster engaging and safe learning environments and set a positive example for students to follow. This could greatly aid students in adopting a positive attitude toward the material, learning it without reservation, and ultimately improving their performance (Mensah & Okyere, 2019). Additionally, the involvement of the teacher helps students become more motivated to pursue mathematics as a subject. It implies that students will be more driven to master fundamental mathematical concepts and skills if their teacher is more invested in doing so (Doño & Mangila, 2021). Furthermore, teachers who start classes on time to improve performance, make learning more engaging, interesting, and applicable, facilitate the acquisition and absorption of knowledge, provide the chance for more student-centered instruction, provide guidance to students on how to complete a given task, prevent and resolve conflict in the classroom, instill discipline, and encourage positive behavior among students all have an impact on students' academic performance (Akpomi et al., 2022).

Students' math performance is also predicted by their attitude toward learning. Students' ideas of their worth, value, and enjoyment drive their desire to learn and value mathematics (Anastasiadis & Zirinoglou, 2022). Worse academic achievement and weaker behavior were linked to high levels of worry, low levels of self-esteem, and low levels of enjoyment (Zapata-Lamana et al., 2021). Children who struggle with math anxiety frequently perform worse and have lower levels of interest and self-efficacy in mathematics (Malanchini et al., 2020). There is a widespread view that anxiety frequently results in poor mathematics performance (Lailiyah et al., 2021). Students who experience more math anxiety perform less well in mathematical activities (Buratta et al., 2019). A fear of math negatively affects an individual's motivation, interest, attitude, and problem-solving ability in the subject (Capinding, 2022).

The basis for learning is provided by the home environment, which is also a factor in student life that might have an impact on school performance. Parental involvement, attitudes, ideas, and resources are incorporated into the home learning environment, which supports children's growth, particularly their mathematical skills (Skwarchuk et al., 2022). Through social interactions with their parents at home, children learn mathematics, and what they learn is influenced by a variety of environmental inputs (Daucourt et al., 2021). Parents must become interested in their children's education, which includes engaging in activities such as homework assignments, classwork reviews, disciplinary actions, and attendance monitoring (Anthony & Nombo, 2020). Parents must participate in and support the child's homework-related activities. However, they felt more at ease when it came to helping with reading and writing than mathematics (Shahzad et al., 2020).

Students' mathematics performance is measured by their capacity to correctly answer problems and display their mathematical knowledge and skills Based to test results or passing grades on mathematics exams (Chand et al., 2021). Students who performed well in their mathematics classes typically do well in their other academic fields as well. Additionally, students with higher levels of mathematical preparation typically outperformed those with lesser levels of preparation in their mathematics courses (Guinocor et al., 2020). Moreover, students that are motivated to learn mathematics typically outperform those who lack interest in the subject (Ayebale et al., 2020).

Students' attitudes toward the subject, teachers' instructional methods, and the learning environment at school are just a few of the factors that have an impact on how well students learn and succeed in

mathematics. Students' attitudes toward mathematics were found to be positive. Yet, once students move through secondary school, this begins to change. The issue extends beyond the students' attitudes; other elements affect their grades, such as the instructional methods that mathematics teachers employ to impart knowledge and the availability of institutional resources (Mazana et al., 2019). Moreover, the teachers' classroom management, home environment, and attitudes toward the subject matter all play a role in how well students perform in mathematics. It has been proven that the attitudes of students and their academic performance in learning mathematics are significantly linked (Peteros et al., 2019).

Mathematics performance holds utmost importance in educational settings due to its significant influence on students' academic success. Several factors play a role in how well students do in mathematics, such as how teachers manage the classroom, how students feel about the subject, and the influence of their home environment. Understanding the relationships between these variables allows researchers to learn more about what predicts mathematics performance and to offer useful information to parents, teachers, and students. The current study explored the teachers' classroom management, students' attitude, and home environment at a selected tertiary school in Ozamiz City during the second semester of SY 2022-2023 to inform practices aimed at improving students' mathematics performance.

Statement of the Problem

Several factors such as classroom management, student attitudes, and home learning environments were discussed individually. Further research is needed to explore how these factors interact within the educational landscape of the Philippines. This study investigated predictors of students' performance in Mathematics at selected tertiary schools in Ozamiz City, Misamis Occidental, during the 2022-2023 school year. Specifically, the study sought to answer the following research questions:

1. What is the level of teachers' classroom management in terms of learning environment, students' emotional aspect, planning, time management, and discipline?
2. What is the level of students' attitude in terms of self-confidence, value, enjoyment, motivation, and self-efficacy?
3. What is the level of students' home environment?
4. What is the students' mathematics performance?
5. Is there a significant relationship between the teachers' classroom management and students' mathematics performance?
6. Is there a significant relationship between the students' attitude and their mathematics performance?
7. Is there a significant relationship between the students' home environment and their mathematics performance?
8. Which among the independent variables predicts the students' performance in mathematics

METHODS

Research Design

The descriptive-correlational design was adopted in this quantitative study. The descriptive design investigated the sample and the study's variables without manipulating them (Siedlecki, 2020). The correlational design made it easier to predict and explain how the variables are related (Seeram, 2019). The descriptive-correlational design was appropriate for this study, as it described the teachers' classroom management, students' attitudes, and home environment and how these related to their performance in mathematics.

Research Setting

The research was conducted in a selected tertiary school institution in Ozamiz City, Misamis Occidental,

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Philippines. It is the first university in Northwestern Mindanao to have been given "Autonomous Status" by the Commission on Higher Education (CHED). The 12 colleges of this university provide a total of 29 programs, including graduate programs and full Basic Education programs. The university received an exceptional rating from DNV for its certification under ISO 9001: 2008 and was acknowledged by PACUCOA (The Philippine Association of Colleges and Universities Commission on Accreditation) as having the most certified programs in Region X for two straight years. The university also passed the Institutional Sustainability Assessment, or ISA, and CHED recognized the information technology, criminology, and teacher education programs as Centers of Development (COD). The university also offers a wide range of college courses for students to choose from. The university has numerous academic departments, including the College of Agriculture and Forestry, College of Business and Management, College of Arts and Sciences, College of Computer Studies, College of Dentistry, College of Criminology, College of Education, College of Engineering and Technology, College of Maritime Education, College of Medical Technology, and College of Nursing, Midwifery & Radiologic Technology. Within these departments, students can pursue various degrees. With a diverse range of programs available, students can explore their interests and develop the necessary skills and knowledge to succeed in their chosen field. College students enrolled in these colleges are required to take the Mathematics 1 (Mathematics in the Modern World) subject as part of the General Education (GE) subjects.

Research Respondents

The sample size of 160 was drawn from a population of 272 and calculated using the Raosoft sample size calculator for the study conducted in a selected tertiary school of Ozamiz City, and they were chosen through purposive sampling. The selection of the respondents was based on the following criteria: (1) College students who are enrolled in the second semester of SY 2022-2023, who are taking Mathematics 1 subject; (2) students who are willing to participate in the study. Before starting the surveys, the researchers made sure that all the criteria were followed.

Research Instruments

The study used three questionnaires as data gathering instruments, namely the Teachers' Classroom Management in Mathematics Questionnaire (Tacadena, 2021), the Attitudes Toward Mathematics Inventory (ATMI) (Tapia and Marsh, 2000), and the Students' Home Environment Questionnaire (Kembo, Othuon, and Etshiano, 2021).

A. Teachers' Classroom Management in Mathematics Questionnaire (Appendix A). This questionnaire was adopted from Tacadena (2021). The items were constructed using a 4-point Likert scale format, and the students respond to the statements on a scale ranging from always (4), often (3), sometimes (2), to never (1). The instrument contains 25 items with 5 constructs, namely, learning environment (5 items), students' emotional aspect (5 items), planning (5 items), time management (5 items), and discipline (5 items). The items were relevant to this study since it emphasized students' home environment toward mathematics. In determining the teachers' classroom management, the following scale was used:

Responses	Continuum	Interpretation
4- Always	3.25-4.0	Very Good
3- Often	2.5-3.24	Good
2- Sometimes	1.75-2.49	Poor
1- Never	1.0-1.74	Very Poor

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B. The Attitudes Toward Mathematics Inventory (ATMI) (Appendix B). This questionnaire was adopted from Tapia and Marsh (2000). The items were constructed using a 4-point Likert scale format, and the students respond to the statements on a scale ranging from strongly agree (4), agree (3), disagree (2), to strongly disagree (1). The instrument comprises 27 items with five constructs, namely, self-confidence (6 items), value (5 items), enjoyment (6 items), motivation (5 items), and self-efficacy (5 items). The questionnaire contains items that are relevant to this study since it emphasized students' attitude toward mathematics. To determine the students' attitudes in mathematics, the study used the following continuum:

Responses	Continuum	Interpretation
4- Strongly Agree (SA)	3.25-4.0	Very High
3- Agree (A)	2.5-3.24	High
2- Disagree (D)	1.75-2.49	Low
1- Strongly Disagree (SD)	1.0-1.74	Very Low

C. Students' Home Environment Questionnaire (Appendix C). This questionnaire was adopted from Kembo, Othuon, and Etshiano (2021). The items were constructed using a 4-point Likert scale format, and the students respond to the statements on a scale ranging from strongly agree (4), agree (3), disagree (2), to strongly disagree (1). The instrument contains 10 items that are relevant to this study since it emphasized students' home environment toward mathematics. In determining the students' home environment, the study used the following continuum:

Responses	Continuum	Interpretation
4- Strongly Agree	3.25-4.0	Very Good
3- Agree	2.5-3.24	Good
2- Disagree	1.75-2.49	Poor
1- Strongly Disagree	1.0-1.74	Very Poor

D. Students' Performance in Mathematics. The researchers used documentary analysis with the students' midterm grades in Mathematics 1 from their teacher. In determining the students' performance in mathematics, the study used the following continuum:

Continuum	Interpretation
1.00-1.50	Very Good
1.51-2.00	Good
2.01-2.50	Fair
2.51-3.00	Poor
3.10-5.00	Very Poor

Research Instruments

Before gathering data, the researchers submitted a letter of permission to the college dean, obtaining consent to conduct the study. The researchers then obtained approval from the program head and then the research teacher. After the approval, researchers prepared a consent letter for the participants. The researchers explained the purpose of the study to the respondents and discussed the ethical considerations. Subsequently, the researchers developed three Google Forms for the three research instruments and shared the Google Form links with the students. Once the questionnaires were completed, the data was tallied using the Microsoft Excel application and subjected to statistical computations using the Minitab software. For

analysis and subsequent interpretation of the data, the results were presented in tabular form.

Ethical Considerations

The ethical aspect of the study was maintained by adhering to the ethical considerations emphasized by the Republic Act No. 10173, otherwise known as the Data Privacy Act of 2021, which highlights the importance of safeguarding individuals' personal information and respecting their rights to privacy and data protection. Also, the study maintained its ethical aspect by following the ethical considerations of Bell, Bryman, and Harley (2022). The respondents were not harmed in any way during the study, and their consent was obtained before data collection. The participants signed the informed consent form, indicating their willingness to participate in the study. Moreover, the study's objectives, benefits, and potential risks were transparently communicated to the respondents. The participants can withdraw from the survey at any time, and their responses would be kept confidential. Ensuring anonymity and confidentiality were the utmost importance throughout the study. Any form of misleading information, as well as biased representation of primary data findings, were avoided. Affiliations in any form, funding sources, and possible conflicts of interest were proclaimed. Any communication regarding this research was done with honesty and transparency. Respondents were encouraged to contact the researchers if they have any questions or problems.

Data Analysis

The study used the following tools in analyzing the data gathered with the use of Minitab Software:

Mean and Standard Deviation were used in determining teachers' classroom management, students' attitudes, and home environment.

Frequency and Percentage were used in determining students' performance in mathematics.

Pearson Product Moment Correlation Coefficient was used in exploring the significant relationship between the teachers' classroom management, students' attitude, and home environment concerning their mathematics performance.

Stepwise Multiple Regression Analysis was used to utilized to identify the constructs in the teachers' classroom management, students' attitudes, and students' home environment that may predict singly or in combination with students' mathematics performance.

RESULTS AND DISCUSSION

Teachers' Classroom Management

The teachers' classroom management was measured in areas of learning environment, students' emotional aspect, planning, time management, and discipline (Table 1). The data revealed that the overall classroom management was very good (M=3.39; SD= 0.61). The data showed that the teachers were successful in fostering an enjoyable learning environment, attending to students' emotional needs, efficiently planning and managing time, and upholding classroom discipline, all of which are variables that positively affected students' performance in mathematics.

The data showed that the teachers had very good learning environment management (M=3.45; SD=0.57), planning ((M=3.40; SD=0.61), time management (M=3.39; SD=0.62), and discipline (M=3.54; SD=0.57). However, the teacher had good students' emotional aspect (M=3.18; SD=0.67).

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The teachers promoted student engagement and academic growth by fostering a learning environment. They showed that their methods of instruction were well-prepared and organized, resulting in a well-structured approach to teaching mathematics. They enabled the optimal use of class time and reduced disturbances while maximizing learning opportunities in mathematics. The teachers were effective in creating and upholding a supportive and organized classroom setting that fostered a focused and respectful environment conducive to learning mathematics. However, when compared to other parts of classroom management, such as the learning environment, planning, time management, and discipline, it became evident that teachers exhibited higher proficiency in those areas in comparison to addressing the emotional needs of their students. It showed that teachers slightly struggled to understand, show empathy, and effectively meet the emotional needs of their students.

Student's behavioral engagement and school identification are enhanced by teachers' effective feedback practices, as evidenced by higher levels of engagement and identification among students who believed their teachers used more effective feedback (Monteiro et al., 2021). To overcome obstacles and satisfy students' educational needs, effective instructional preparation is essential, including the creation of appropriate materials and teacher support (De Vera et al., 2022). Effective time management during the learning process makes activities easier, more comfortable, and more organized within an established timetable, which encourages students to become more committed, more productive, and more effective at prioritizing their tasks (Mariam et al., 2020). The goal of a teacher's efforts to instill in students a disciplined character is for the students to internalize discipline by adhering to school rules, being punctual, and exhibiting respectful attitudes and behaviors (Subiarto & Wakhudin, 2021).

Students' learning motivation is boosted when their psychological needs are met by teachers' emotional support, which increases their willingness to commit time and effort to learning tasks and increases the possibility that they will succeed academically (Yang et al., 2021). The significance of teachers' abilities in fostering a positive emotional environment in the classroom is highlighted by the fact that teachers' emotions and effective classroom management, including the regulation and expression of positive emotions, play a crucial role in shaping students' emotional experiences (Frenzel, et al., 2021). When teaching mathematics, teachers should successfully recognise and manage students' achievement emotions, focusing on good emotional experiences while skillfully handling and altering negative emotions like anger, anxiety, and shame (Lin et al., 2020).

Teachers are able to provide priority to strategies that meet students' emotional needs in order to improve their emotional wellbeing and foster a supportive emotional environment in the classroom. Recognition of achievement emotions, both positive and negative, as well as developing a thorough understanding of students' emotional experiences are essential. Students can express their emotions in a secure environment created by compassionate and open conversation. Regular check-ins, peer engagement, and relatable examples are key to fostering a pleasant emotional environment. Giving advice and using targeted behaviors are necessary for managing unpleasant emotions including anger, anxiety, and shame.

TABLE 1: TEACHERS' CLASSROOM MANAGEMENT IN MATHEMATICS (n=160)

Constructs	M	SD	Remarks
Learning Environment	3.45	0.57	Very Good
Students' Emotional Aspect	3.18	0.67	Good
Planning	3.40	0.61	Very Good
Time Management	3.39	0.62	Very Good
Discipline	3.54	0.57	Very Good

Overall Classroom Management	3.39	0.61	Very Good

Note: 3.25-4.0 (Very Good); 2.50-3.24 (Good); 1.75-2.49 (Poor), 1.0-1.74 (Very Poor)

Students' Attitude

The student's attitude was measured in areas of their self-confidence, value, enjoyment, motivation, and self-efficacy (Table 2). The overall student's attitude toward mathematics was high (M=2.58; SD=0.69). Students' positive attitude towards mathematics, driven by their perception of the subject as interesting, valuable, and enjoyable, was expected to have a direct impact on their increased engagement and improved academic performance in the discipline.

Students had high remarks in terms of value ((M=3.20; SD=0.64), and enjoyment (M=2.58; SD=0.70). However, students had low remarks in terms of their self-confidence (M=2.32; SD=0.73), motivation (M=2.33; SD=0.70), and self-efficacy (M=2.49; SD=0.68).

Students indicated a desire to improve their skills and found fulfillment in mathematical experiences, showing that they understood the importance of mathematics as a valuable and important subject. They perceived this subject to be interesting and fun, and they felt positively about it. Due to their willingness to take on new challenges and pursue higher mathematical education, this positive attitude towards mathematics was likely to improve their motivation and overall performance in the subject. However, students displayed a lack of confidence, motivation, and self-efficacy in their mathematical abilities. Students viewed math as a difficult and intimidating subject. They exhibited decreased levels of drive, enthusiasm, and eagerness to actively engage in mathematical tasks and learning situations. Their self-perception of ability and effectiveness in carrying out mathematical activities and using mathematical skills tended to be relatively lower.

A variety of positive outcomes, including positive emotions and attitudes toward mathematics, mathematical engagement, positive classroom relationships, feeling respected, academic success, and perceptions of meaningful mathematics learning have all been linked to students' values in mathematics education (Kalogeropoulos & Bishop, 2019). Students that have a good attitude toward mathematics are more likely to prioritize their math studies since they tend to like the subject and recognize its importance (Mullis et al., 2020) Activities that improve mathematics confidence also increase math enjoyment (Christensen & Knezek, 2020).

According to a study, students' self-confidence may be divided into three categories: high self-confidence (25%), moderate self-confidence (55%), and low self-confidence (20%). The percentages of students with moderate and low self-confidence show that many students may love math but lack enough learning support or dislike the teachers' methods of instruction (Daud et al., 2020). Poor student performance can cause a decrease in self-efficacy by increasing mathematical anxiety and lowering self-confidence. Mathematics anxiety may be reduced by enhancing mathematical self-efficacy and encouraging the integration of learned material (Rozgonjuk et al., 2020). Students show low levels of motivation as a result of gaps in past education, a lack of interest in future occupations, and a limited sense of mathematics' relevance to their chosen fields (Saadati & Celis, 2023).

Teachers can assist students in overcoming their mathematical difficulties by creating a welcoming, encouraging learning atmosphere in the classroom that supports an improving attitude. This entails adapting educational strategies to suit varied learning styles in addition to encouraging teamwork. This strategy's key components include setting realistic, attainable objectives, giving insightful, constructive feedback, and relating mathematical concepts to real-life problems. Additionally, students may significantly enhance their mathematical abilities and expertise through active involvement in class, cooperating with peers, accepting

mistakes as opportunities for learning, and realizing that comprehending mathematics is a gradual process.

TABLE 2: STUDENTS' ATTITUDE IN MATHEMATICS (n=160)

Constructs	M	SD	Remarks
Self-Confidence	2.32	0.73	Low
Value	3.20	0.64	High
Enjoyment	2.58	0.70	High
Motivation	2.33	0.70	Low
Self-efficacy	2.49	0.68	Low
Overall Attitude	2.58	0.69	High

Note: 3.25-4.0 (Very High); 2.50-3.24 (High); 1.75-2.49 (Low), 1.0-1.74 (Very Low)

Students' Home Environment

The students' overall home environment was measured using mathematics resources, studying conditions, parental support, and monitoring of progress (Table 3). The student's home environment towards mathematics was high (M=2.58; SD=0.69), indicating that students typically had access to math textbooks, a comfortable study space, and parental involvement and oversight in their math studies at home indicated a favorable and supportive home environment for their academic development in mathematics.

According to a study, parents (or other primary caregivers) help school-aged children with their academic performance by exposing them to literacy and mathematics in their homes and by guiding, expanding, mentoring, and applying it (Skwarchuk et al., 2022). The physical facilities students have access to at home, such as a balanced meal, stationery, books, and study aids related to their studies, as well as tuition and advice resources, have received positive feedback from students (Khan, 2019). The likelihood of children's social, psychological, physical, emotional, and moral well-being developing positively is increased by a caring and secure family environment. To properly manage children's emotional and intellectual development, parents must have self-awareness of themselves and thoughtfully transmit that to their children (Younas et al., 2021).

Parents make sure their children always have access to mathematics resources, such as books and internet tools. Additionally, they provide a relaxing and noise-free study environment that encourages attentiveness and concentration. Furthermore, it's essential to continue to be actively involved in the students' mathematics studies by offering support as needed and keeping lines of communication open regarding their progress. To build teamwork and provide consistent support for students' at-home mathematical learning, teachers also encourage regular communication with parents.

TABLE 3: STUDENTS' HOME ENVIRONMENT (n=160)

Constructs	M	SD	Remarks
Home Environment	2.52	0.69	Good

Note: 3.25-4.0 (Very Good); 2.50-3.24 (Good); 1.75-2.49 (Poor), 1.0-1.74 (Very Poor)

Students' Mathematics Performance

Data in Table 4 revealed that students' performance in mathematics was very poor (M=3.15). The highest proportion of students demonstrated poor performance (f= 60; %= 37.50), followed by those performing at a

very poor level (f= 40; %= 25.00). A significant percentage achieved a fair level of performance (f= 39; %= 24.38), while a smaller percentage demonstrated good performance (f= 15; %= 9.38). The smallest proportion of students achieved a very good level of performance (f= 6; %= 3.75). Students' performance in mathematics was measured through class standing and participation, and examinations. Class standing and participation were weighted at a substantial seventy percent (70%), reflecting significance in evaluating a student's performance. Similarly, examinations carried an equal weightage of seventy percent (70%), emphasizing the pivotal role in assessing a student's knowledge and understanding.

The data showed that a small number of students performed at a very high level in mathematics, demonstrating their great grasp and command of the subject as demonstrated by their excellent class standing and exam scores. However, the results also showed a large number of students who performed poorly, highlighting the fact that many students had trouble comprehending crucial concepts in mathematics.

Poor academic performance, particularly in mathematics, has been linked to inexperienced teachers and ineffective teaching strategies, as students have expressed difficulty understanding explanations and the pace of instruction (Varaidzaimakondo & Makondo, 2020). Despite their perception that they understood the lectures, students' test results in mathematics repeatedly showed low performance, which suggests that they need more enrichment and reinforcement activities to improve their mathematical skills (Magsino Jr, 2021). Students' unfavorable attitudes toward mathematics, such as those of fear, boredom, and difficulty, are significantly influenced by the emotional stresses they experience, as well as by their less strong prior knowledge and the lack of links between prior knowledge and current accomplishment (Rijal, 2020). Parents' low educational attainment and financial instability are to blame for their children's poor math performance, which results in children having to walk a long way to school and going without food for most of the day (Mazana et al., 2020).

For teachers to improve their pedagogical abilities and their capacity to clearly explain mathematical topics, professional development programs are offered, especially for inexperienced ones. To make sure they are interesting and meet the various learning needs of students, instructional methods are also evaluated and modified. To give students more support and opportunity to develop their understanding of mathematics, reinforcement, and enrichment activities are integrated into the curriculum. By putting positive learning environment tactics into practice, such as encouraging interactive and collaborative learning experiences, efforts are made to overcome negative attitudes about mathematics. In addition, it is critical to take into account the socioeconomic issues that affect students' performance, such as poor parental education levels and unstable finances.

TABLE 4: STUDENTS' MATHEMATICS PERFORMANCE (n=160)

Satisfaction Level	Frequency	Percentage	M	SD	Min	Max
Very Good	6	3.75	1.29	0.24	1.00	1.50
Good	15	9.38	1.98	0.06	1.75	2.00
Fair	39	24.38	2.40	0.12	2.25	2.50
Poor	60	37.50	2.89	0.12	2.75	3.00
Very Poor	40	25.00	5.00	0.00	5.00	5.00
Overall Performance	160	100.00	3.15	– Very Poor		

Note: Performance Scale: 1.0-1.5 (Very Good); 1.51-2 (Good); 2.01-2.5 (Fair); 2.51-3.00 (Poor); 3.1-5.0 (Very Poor)

Significant Relationship between the Teachers' Classroom Management and Students' Mathematics Performance

Pearson Product Moment Correlation Coefficient was used to determine the significant relationship between the teachers' classroom management and students' mathematics performance (Table 5). The data revealed that the learning environment (r= -0.00; p=0.99) and discipline (r= -0.01; p=0.95) were extremely weak and indicated that these correlations were not statistically significant in relation to students' mathematics performance. Moreover, there was a very weak positive correlation between students' emotional aspect (r= 0.03; p=0.71) and math performance, but it suggested that this correlation was not statistically significant. In addition, a slight positive correlation was observed in planning (r= 0.05; p=0.52) and time management (r= 0.03; p=0.69), but it implied that these correlations were not statistically significant in relation to students' mathematics performance.

Classroom arrangement, cleanliness, comfort, and discipline seemed to have minimal impact on students' mathematics performance. The way the classroom was set up, how comfortable it was, and how well it was managed appeared to have little effect on how well kids did in mathematics. It's possible that changes to these factors wouldn't significantly improve mathematics achievement scores. Students' emotional well-being and mathematics performance were slightly improved by the teacher's friendliness, encouragement of class engagement, and fun activities. This association, however, lacked statistical significance, indicating that slight improvements in emotional well-being may not have a significant impact on mathematics performance. The introduction of the objective, the preparation of the materials, and the allocation of time all had a marginally beneficial impact on students' mathematics performance. However, these effects were not statistically significant, suggesting that slight improvements in time management and planning may not have a significant impact on mathematics achievement.

It was implied that classroom management has an unlimited influence on instructional quality, social-emotional support, and the occurrence of behavioral issues in classrooms by the existence of a significant correlation between teachers' classroom management and students' mathematics test scores or mathematics interest (Zhu and Kaiser, 2022). According to another finding, there is no significant correlation between academic achievement and respondents' perceptions of teacher-student-related issues. This means that while poor teaching and learning materials have a significant negative impact on student's performance in mathematics, teacher-related factors, such as instructional methods and attitudes, do not (Villalobos, 2020). Even after adjusting for students' prior academic success, the study found that student-parent and student-peer connections were strongly associated with academic achievement. In the same study, however, there was no correlation between student-teacher interactions and academic achievement (Leung et al., 2021).

Teachers must concentrate on ensuring that students have access to quality teaching and learning resources. The learning and mastering of mathematical ideas by students can be greatly impacted by investing in high-quality resources that are in line with the curriculum. Additionally, emphasis is placed on developing strong ties between students and their parents and peers. Academic success and motivation are positively impacted by cultivating a friendly, cooperative environment where students feel included and involved. Teachers then investigate several methods of instruction that emphasize the delivery of effective and engaging content. Teachers can increase their students' interest in mathematics and improve their learning outcomes by implementing creative teaching methods.

TABLE 5: TEST OF RELATIONSHIP BETWEEN THE TEACHERS' CLASSROOM MANAGEMENT AND STUDENTS' MATHEMATICS PERFORMANCE

Variables	r-value	*p*-value	Remarks
Learning Environment and Students' Mathematics Performance	-0.00	0.99	Not Significant

Students' Emotional Aspect and Students' Mathematics Performance	0.03	0.71	Not Significant
Planning and Students' Mathematics Performance	0.05	0.52	Not Significant
Time Management and Students' Mathematics Performance	0.03	0.69	Not Significant
Discipline and Students' Mathematics Performance	-0.01	0.95	Not Significant

*Note: **p<0.01* (Highly Significant)*; *p<0.05* (Significant)*; p*>0.05 (Not significant)

Significant Relationship between the Students' Attitude and their Mathematics Performance

Pearson Product Moment Correlation Coefficient was used to determine the significant relationship between the student's attitude and their performance in mathematics (Table 5). The correlation coefficient (r= -0.21) on students' value suggested a moderate negative relationship between their performance in mathematics, and the low p-value (p=0.01) indicated that this relationship was statistically highly significant. Also, the correlation coefficient (r= -0.17) on students' self-efficacy suggested a moderate negative relationship between their performance in mathematics, and the p-value (p=0.03) indicated that this relationship was statistically significant.

The results of the study indicated that students who placed less value or emphasis on mathematics typically performed poorly in the subject. It made sense to say that students who valued mathematics less might not have had the motivation to engage with it passionately. This could have resulted in less effort and engagement, which would then have affected academic success. Additionally, students who were less confident in their own mathematical abilities typically scored worse in the subject. It was possible that students who were unsure of their abilities in mathematics approached problems with caution, which diminished engagement and ultimately resulted in poor academic performance.

However, the correlation coefficient (r= -0.09) on students' self-confidence indicated a very weak negative relationship between their performance in mathematics, and the p-value (p= 0.28) suggested that this relationship was not statistically significant. Also, the correlation coefficient (r= -0.15) on students' enjoyment indicated a weak negative relationship between their mathematics and performance, and the p-value (p= 0.07) indicated that this relationship was not statistically significant. Moreover, the correlation coefficient (r= -0.10) on students' motivation suggested a very weak negative relationship between their performance in mathematics, and the p-value (p= 0.20) was relatively high, indicating that the observed correlation was not statistically significant.

The study showed that students' confidence in mathematics had a limited direct impact on performance, with factors such as preparation, understanding concepts, and study methods playing a more significant role. Nevertheless, enhancing self-confidence could enhance mathematics learning strategies and interest. Additionally, enjoyment of mathematics was moderately related to performance, but not consistently so. Despite the weaker statistical correlation, creating interest could increase involvement and possibly result in better outcomes. Furthermore, although less significant than study habits, concept comprehension, and time management, mathematics motivation showed a weak correlation with academic performance. Positive learning environments could improve attitudes towards learning and progressively improve performance. While not strongly statistically significant, self-confidence, enjoyment, and motivation indirectly affected engagement, perseverance, and learning strategies in mathematics, gradually shaping academic performance over time.

Students with a positive attitude toward mathematics are more likely to recognize its importance, prioritize their studies, and achieve better academic performance (Kiwanuka, 2020). Students who place a higher value on mathematics are likely to perform better in mathematics because they are more motivated to study the subject and will persevere in the face of challenges (Cho & Hwang, 2019). It is essential to identify and

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change negative attitudes to enhance math performance since they have an impact on student performance, motivation, and engagement (Chaudhry et al., 2019). One of the key elements influencing the learning process and reaching learning objectives is self-efficacy (June & Eamoraphan, 2019). Participants with high self-efficacy in mathematics reported higher overall performance compared to those with low self-efficacy (Abduljabbar, 2023). It has been demonstrated that mathematics self-efficacy aids students in feeling more confident when solving difficult mathematical problems (Wang et al., 2020).

Similar to previous results, a study reveals that mathematical self-confidence may not be an essential component for attaining desired performance levels, as engaging, inspiring, and encouraging instruction can still enhance student progress and foster the development of mathematical self-confidence (Aguilar, 2021). However, when students are highly motivated in their study and their interest in the subject as a whole significantly increases, the positive impact of motivation on students' interest in mathematics becomes apparent (Arthur, 2022). Teachers should emphasize including engaging activities that make learning interesting and exciting, as this will promote a good and enthusiastic environment in math classes and improve math education, and counter student indifference (Abalde & Oco, 2023).

Mathematics teachers promote enjoyment and motivation by fostering an extensive learning environment. This strategy improves learning and engagement. It is crucial to develop strategies that integrate comprehension and study exercises. Students acquire empowerment when they understand how attitudes influence results. Self-confidence is important, but so are enthusiasm, self-worth, and motivation. Success is influenced by passionately embracing mathematics, discovering significance, and successful learning. A well-rounded plan includes time management, clarity, and study habits. This all-encompassing strategy promotes positive learning and improved mathematics performance.

TABLE 6: TEST OF RELATIONSHIP BETWEEN THE STUDENTS' ATTITUDE AND THEIR MATHEMATICS PERFORMANCE

Variables	r-value	*p*-value	Remarks
Self-confidence and their Performance in Mathematics	-0.09	0.28	Not Significant
Value and their Performance in Mathematics	-0.21**	0.01	Highly Significant
Enjoyment and their Performance in Mathematics	-0.15	0.07	Not Significant
Motivation and their Performance in Mathematics	-0.10	0.20	Not Significant
Self-efficacy and their Performance in Mathematics	-0.17*	0.03	Significant

*Note: **p<0.01* (Highly Significant)*; *p<0.05* (Significant)*; p*>0.05 (Not significant)

Significant Relationship between the Students' Home Environment and their Mathematics Performance

Pearson Product Moment Correlation Coefficient was used to determine the significant relationship between the student's home environment and their performance in mathematics (Table 7). The data indicated a weak negative linear relationship between the home environment (r = -0.05) and students' performance in mathematics, suggesting that changes in the home environment were not strongly linked to changes in mathematics performance. Additionally, the observed relationship lacked statistical significance (p = 0.57).

The results indicated that a number of variables, such as the availability of mathematics textbooks, an appropriate study space, good lighting, necessary equipment like calculators and mathematical tables, a designated study room, and parental supervision, did not significantly affect changes in students' mathematical performance. Furthermore, factors including parental involvement, educational levels,

availability of mathematics resources, and suitability of the study environment did not significantly predict the observed variability in students' mathematics performance outcomes.

Significant correlations with math performance, particularly in number comprehension, have not consistently been determined, despite several criteria including the number of resources in the home learning environment, the frequency of home learning activities, and parent levels of education and income (Merkley et al., 2022). The lack of a relationship between parents' level of education and students' math performance suggests that students whose parents do not have a 4-year degree were not prevented from succeeding in the online course and that being in college and having the ability to handle their learning tasks enabled them to compete effectively without depending on their parent's involvement (Gabales et al., 2022).

Parents need to be mindful that factors other than the family environment play an important role in determining academic performance. Parents can actively support their child's academic path by establishing a good attitude towards learning, encouraging interest, and instilling a dedication to learning, as opposed to solely focusing on providing certain tools. Parents play a critical part in determining their child's overall academic and personal progress by having truthful and encouraging conversations about their child's interests and struggles, providing emotional support, and highlighting the qualities of perseverance and determination. Recognizing the need of all-encompassing assistance and a supportive environment in enabling students to succeed both academically and personally is essential.

TABLE 7: TEST OF RELATIONSHIP BETWEEN THE STUDENTS' HOME ENVIRONMENT AND THEIR MATHEMATICS PERFORMANCE

Variables	r-value	*p*-value	Remarks
Home Environment and their Performance in Mathematics	-0.05	0.57	Not Significant

*Note: **p<0.01* (Highly Significant)*; *p<0.05* (Significant)*; p*>0.05 (Not significant)

Regression Analysis on the Teachers' Classroom Management, Students' Attitude, and their Home Environment Predict their Mathematics Performance

Stepwise Regression Analysis was used to identify the predictors of students' performance in mathematics resulting in p-values lesser than 0.05 alpha level (Table 8). The finding revealed that the teachers' planning (β= 0.36, t= 2.22, p= 0.03) and students' value (β= 0.53, t= 3.41, p= 0.00) were the predictors of their performance in mathematics (Table 4). Other factors like the learning environment, students' emotional aspect, time management, discipline, self-confidence, enjoyment, motivation, self-efficacy, and home environment did not affect the performance of students in mathematics.

The regression equation (Students' Performance: 3.61 + 0.36 Planning + 0.53 Value) indicated that the unit increase of the teachers' planning and students' value in mathematics, their performance also increased by 0.36 and 0.53 respectively. The data indicated that teachers' outstanding preparation and students' views of mathematics' value had a favorable impact on their academic performance in mathematics, underlining the benefits of planned instruction and encouraging a sense of relevance in the subject.

The extent to which students' performance in mathematics varied could be accounted for by teachers' classroom planning and the value that students ascribed to mathematics (R^2 = 8.11%). This indicated that 8.11% of student's performance in mathematics could be attributed to the teachers' classroom planning and the value they attached to mathematics. However, the remaining 91.89 percent could be attributed to other factors not included in the study. Hence, another similar study might be conducted for future researchers to examine the other factors that might affect the student's performance in mathematics.

Understanding students' learning preferences enables teachers to create customized teaching strategies that will boost learning and academic success in mathematics (Cardino & Cruz, 2020). Research highlights the important influence of teacher-related elements on students' accomplishments or failures in mathematics, and it has been shown that teachers' unsuitable teaching approaches can worsen students' difficulty learning mathematics (Kiarsi & Ebrahimi, 2021). Teachers should design activities that encourage problem-solving, reasoning, and critical thinking through interesting activities and a questioning mindset to enhance mathematical thinking and critical abilities (Celik & Ozdemir, 2020). Making educational materials can help students perform better in math classes, act as an "eye-opener" for the department, and direct efforts to educate teachers and find ways to raise the standard for mathematics education (Tobias, & Diego, 2022). Teachers should strategically prepare and implement clear rules, anticipate the needs of students, orient newcomers, give detailed instructions, and structure units within the allotted time, fostering involvement and flexibility, to create the best learning environment possible (Tacadena, 2021).

Students' aptitude traits are linked to the variables that affect their interest in mathematics. Value is the student's perception of the relevance of a task, which gives the task or activity meaning by focusing on its importance (Yarborough & Fedesco, 2020). Students admire mathematics in daily life and find it both engaging and entertaining (Mazana et al., 2019). Students' ideas of their worth, value, and enjoyment drive their desire to learn and value mathematics (Anastasiadis & Zirinoglou, 2022). It is important to provide students with problems that are realistic and simple to visualize to motivate them to connect with and find value in solving mathematical word problems. Students' curiosity is aroused, and they are better able to understand the inherent benefit of actively pursuing answers when they can visualize the challenges clearly (Dwijayani, 2019).

It is essential for teachers to place an emphasis on excellent preparation and to implement appropriate teaching tactics to improve students' math performance. Educators concentrate on creating fun activities that encourage reasoning, critical thinking, and problem-solving. Additionally, developing instructional resources can be a helpful tool for teachers and the department, directing efforts to support teacher development and raising the bar for mathematics instruction. Moreover, teachers can design a perfect learning environment that encourages student participation and flexibility by carefully designing and implementing clear rules, anticipating student requirements, orienting newcomers, giving precise directions, and structuring units with the allowed time.

It is necessary to give students engaging, easily visualizable problem-solving experiences to encourage their interest in and excitement for mathematics. Students' curiosity is sparked, and they have a greater appreciation of the value of actively pursuing solutions when mathematical inquiries are presented in situations they can easily visualize. Additionally, students with high degrees of self-educational goals are more likely to value mathematics, which results in higher instrumental incentives. To increase students' interest and motivation in the topic and improve their overall learning experience, it is important to emphasize the value of mathematics.

TABLE 8: PREDICTORS OF STUDENTS' MATHEMATICS PERFORMANCE

Predictors	Coef (β)	SE Coef	t- value	p-value
(Constant)	3.61	0.55	6.62	0.00
Planning	0.36	0.16	2.22	0.03
Value	0.53	0.16	3.41	0.00
R^2 = 8.11%				
Dependent Variable: Students' Mathematics Performance				

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Students' Performance= 3.61 + 0.36 Planning + 0.53 Value

CONCLUSIONS

This study aimed to investigate predictors that influenced students' mathematics performance, with a specific focus on teachers' classroom management, students' attitude, and the home environment. Based on the findings, the following conclusion were drawn:

1. The teachers excelled at creating an engaging and organized learning environment for mathematics. However, they slightly struggled with addressing the emotional needs of their students.
2. Students' positive attitude towards math directly influenced their engagement and performance. They found math interesting and valuable but lacked confidence in their abilities.
3. Students had access to math textbooks, a comfortable study space, and parental involvement, which supported their academic development in math.
4. A few students demonstrated outstanding understanding and competence in mathematics. However, numerous students had trouble understanding concepts in mathematics.
5. Classroom environment had little impact on math performance. Teacher behavior slightly affected emotional well-being and mathematics performance but lacked statistical significance. Lesson introduction and time allocation minimally benefited math performance but weren't statistically significant.
6. Math-disinterested students performed poorly due to low motivation, while low confidence led to cautious problem-solving, both harming academics. Math confidence's impact was limited; understanding, preparation, and study methods mattered more. Boosting confidence and interest, along with positive environments, improved outcomes.
7. Variables like math resources, study space, equipment, parental factors, and study environment had minimal impact on students' math performance changes. Parental involvement, education levels, and resource availability also didn't significantly predict math outcomes.
8. Effective teacher preparation and students' perception of math's value positively influenced academic math performance, highlighting planned instruction and subject relevance.

RECOMMENDATIONS

Based on the findings and conclusion of the study, the following are the recommendations.

1. Enhance skills in addressing students' emotional needs through targeted professional development while integrating strategies for fostering emotional well-being in a math learning environment.
2. Introduce initiatives to boost students' confidence in mathematics, offering workshops or activities designed to nurture self-esteem and belief in their mathematical capabilities.
3. Promote active parental involvement in their child's math education and provide guidance on supporting learning at home beyond the provision of physical resources.
4. Apply differentiated teaching methods to cater to diverse levels of understanding among students, providing additional assistance and resources for those grappling with mathematical concepts.
5. Acknowledge the limited impact of the classroom environment but continue prioritizing positive teacher behavior for students' emotional well-being. Ensure engaging lesson introductions and effective time allocation, recognizing their incremental impact.
6. Develop programs aimed at increasing motivation for students disinterested in math, emphasizing confidence and interest-building strategies to foster a positive learning atmosphere. Highlight the significance of understanding, preparation, and effective study methods.
7. While recognizing the limited impact of resources and study environments, encourage parents to maintain a supportive role in their child's math education. Stress the importance of creating a positive

home environment for studying and completing homework.

8. Sustain effective teacher preparation and underscore the relevance of math in students' lives. Ensure well-planned instructional methods that convey the practical value of the subject.

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