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Attitudes, Study Habits, and Academic Performance of Junior High School Students in Mathematics

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ABSTRACT

Mathematics as a discipline is considered as one of the most difficult subjects among Filipino learners. This study was conducted in a public national high school in the Mandaue City Division, Cebu, Philippines. The respondents were the 177 Grade 9 students enrolled in mathematics. These respondents were selected using probability random sampling. They were asked to answer a standardized survey questionnaire to assess their attitudes and study habits. The tool is consists of three parts. Part 1 gathers the socio-demographic profile of the respondents. Part 2 assesses the attitudes of the respondents towards mathematics, while Part 3 was used to assess the study habits of the respondents. Furthermore, their academic performance in mathematics was measured based on their first quarter grade, which was retrieved from the Registrar's Office. The study revealed that those respondents had positive attitudes towards mathematics in terms of its value while they had a neutral attitude when it comes to their self-confidence, enjoyment, and motivation in mathematics. Also, the study shows that there was a negligible positive correlation between the attitudes and academic performance of the respondents in terms of their self-confidence, enjoyment, and motivation while there was a weak positive correlation between the value of math and their academic performance in math. It was concluded that students' attitudes and their study habits are significant factors that affect their performance in mathematics. The researchers strongly recommend the utilization of the enhancement plan in the teaching of mathematics to junior high school students.

Keywords: academic performance, attitudes, study habits

INTRODUCTION

Students' performance in mathematics is consistently given attention in different countries because it is regarded as the main subject, which is significant for the growth and development of the nation. The knowledge and skills of students in mathematics are essential in their daily lives in overcoming the difficulties that one may face (Mohamed & Waheed, 2011). That is why there is an emphasis on the lessons that should be taught in mathematics in schools at different levels around the world than any other subject (Orton & Frobisher, 2004). However, in standardized national examinations, results revealed that students perform lower than the expected level. This underachievement in mathematics is not just a problem in a few countries but has become every nation's concern in the past years (OECD, 2003). The Philippines is one of those countries, which has concerns in mathematics achievement specifically in high school.
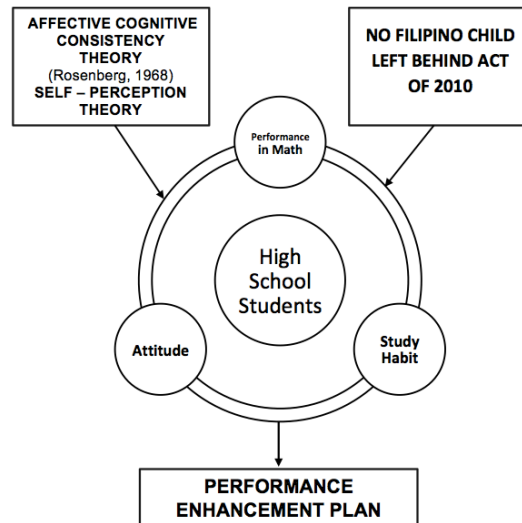
Figure 1. Conceptual Framework of the Study

In 2003, the Philippines participated in the Trends in International Mathematics and Science Study (TIMSS), the country ranked 34th in mathematics out of 38 participating countries. Moreover, in the 2016-2017 data, the country ranked 79th of 138 participating countries in the quality of mathematics education according to the Global Competitiveness Report of the World Economic Forum. These results had been concretized by the Philippines' Department of Education (DepEd) report in the National Achievement Test (NAT) on the mean percentage score (MPS) for high school was below the target performance of the students.

Several studies had been conducted in different countries to determine the factors that could influence the students' performance in mathematics. Of all the factors that could be studied, students' attitudes towards mathematics had been consistently studied because many research found a positive relationship between attitudes and students' performance (Bramlett, 2007; Mohd et al., 2011; Nicolaidou & Philippou, 2003). Generally, the positive perceptions of students in learning mathematics could help develop a positive attitude towards the subject, which will, in turn, lead to better performance. In contrast, the negative perceptions of students towards the subject will also contribute to their low performance in the subject (Bayaga & Wadesango, 2014; Mahanta, 2012; Mensah et al., 2013; Thomas, 2000).

On the other hand, the study habit is one of the factors that could also largely influence students' performance. If this is not given attention by the persons concerned, its effect could become more damaging to students' performance (Ebele & Olofu, 2017). Students need to possess good study habits to excel in life because it is the study habits of the students that aid in obtaining relevant and applicable knowledge. Thus, the absence of these skills would lead the students to poor performance in school (Kaur & Pathania, 2015).

It has been observed that student' attitudes towards learning and study habits have declined because of the different extra-curricular activities that the students in the public national high school in Cebu, Philippines are engaged in. They are more excited to be excused from classes when they are required by teachers to have practice for their presentations. One of the everyday activities that the students have are the monthly activities that each subject are celebrating like Nutrition Month in July, Filipino Language Month in August, Math and Science Month in September, United Nations in October and other similar activities. During each celebration, the majority of students need to participate in the programs of the school. Some students have to excuse from classes because they need to practice for their presentation during the culminating activity of the celebration. In this sense, students lost their focus on their studies because they are already preoccupied of the activities outside the four walls of the classroom.

Moreover, they will spend more time on their extra-curricular activities, thereby leaving their lessons behind. There are even times wherein students need to stay late in school because they need to practice on the events that they are participating in. Hence, students do not have time to study their lessons at home. Since they are already tired in school, these students will not be able to scan their notes to check if they have examinations or assignments for the next day. Besides, being excused during classes will put the learning of the students into compromise because their opportunity to learn the lessons discussed is lost due to their absence during the discussions or activities provided by the teacher in the classroom. Students' learning will have more effect in subjects wherein knowledge on fundamental concepts are required before learning the more complicated concepts like the lessons in mathematics. When students do not acquire the necessary skills in math, their understanding of the advanced topics will be affected. If this case were left unresolved, it would lead to a negative attitude towards the subject especially that most students find mathematics as a difficult subject. Consequently, the performance of the students will be affected.

Thus, it is in this premise that this study was undertaken by the researchers to assess the study habits, attitudes, and performance in mathematics of the Grade 9 students. It is the effort of the researchers to determine the effects of these schools activities towards students' study habits, attitudes, and performance in mathematics so that the findings of this study will be the basis for proposing an enhancement plan for mathematics performance. In such a way, the vision of the DepEd in providing high-quality education in a more holistic approach will be realized without compromising the other aspects of students' development.

FRAMEWORK

This investigation is moored on the hypothesis of Affective-Cognitive Consistency Theory by Rosenberg (1968), which states that the changes in the individuals' affective component will produce changes in ones' cognitive component so that it will bring consistency between the two components. The students' feelings towards the subject will affect how they perform on the subject. A student with a negative attitude towards a subject will think that he or she will not do well in the subject. However, a student with a positive attitude towards a subject will be motivated to perform well because he or she thinks that he or she is capable of achieving in that subject.

In general, students do not like mathematics. Difficulty in understanding the subject matter and teacher-related factors were the primary reasons why these students hate mathematics. This dislike of the subject will result in a negative attitude towards the subject. Moreover, the students who hate the subject do not like studying the subject. More importantly, in mathematics, wherein concepts are difficult for the students to understand, it is essential that their study habits should be developed. Trying to study on subjects where they have negative feelings will not help them improve their performance in the subject. Consequently, students' performance in mathematics will be affected because they will not have time to study the subject.

Moreover, the Self-Perception Theory by Bem (1972) supports this study. The theory states that individuals' actions are interpreted by the way he or she interpret others and ones' actions are most of the time influenced by others and not of ones' own free will as he or she would expect. Similarly, in the case of the students wherein, most of them think that mathematics is a difficult subject, they will tend to have the same feelings with others. Thus, whenever they do not understand the lessons in math, they will have the possibility of thinking that they are not alone. So, one will justify his performance on the premise that most of the students do not like math because it is difficult and so he does. However, if the student feels the other way, then he would develop a positive attitude towards the subject because he can justify why he likes the subject. With these, the willingness of the student to learn the subject can help in developing good study habits on the subject to which the student has a positive attitude. Nagaraju (as cited in Mendezabal, 2013) stressed that positive attitudes and good study habits are important factors in achieving good performance in school. It is expected that students must perform well in school so that they will be able to meet the standards set by DepEd in order to be promoted to the next level. Failure to do so will result in students' retention.

However, the "No Filipino Child Left Behind Act of 2010" states that the state should protect and promote the right of the citizens to quality education and to take appropriate steps to make such education accessible to all. It is in this context that students should be provided with equal opportunity to learn in school. The teachers to ensure learning inside the classroom should address whatever are the shortcomings of the students. Teachers have to encourage students to develop positive attitudes towards the subject they are teaching and assist in the students' development of good study habits. Furthermore, things that would affect their attitudes and study habits should be minimized in order that a positive development on the child

regarding these variables may be observed. Consequently, a better performance, especially in mathematics, may be achieved.

RELATED LITERATURE

Below are related literature and studies that provide a better framework in the development of the study.

McLeod (as cited in Ayob and Yasin, 2017) defined attitudes towards Mathematics as emotional responses, which can be positive or negative feelings based on specific reasons. According to Khoo and Ainley (2005), the attitudes of students are developed over time and will have a significant effect on the students' performance in math. Attitudes are not inherent but the results of students' experiences, which can be changed. However, these are more stable compared to the feelings and emotions of individuals. These are flexible influences of achievement because these are responses to the stimuli provided by education. Moenikia and Zahed-Babelan (2010) pointed out that attitudes of students towards mathematics affect on how well they perform in the subject and how often they engage in the subject. It can also be manifested on the degree of their enjoyment while engaging in tasks related to the subject. Thus, positive attitudes towards mathematics are necessary because these attitudes could influence the willingness of the students to learn the subject and the advantage that it will bring to math instruction (Atanasova-Pacemska et al., 2015). Similarly, a negative attitude towards mathematics would lead to a negative emotional disposition towards the learning of the subject, which may impede learning (Mata et al., 2012).

Odiri (2015) opined that study habits play a significant role in determining the quality of education and achievement of students in mathematics since students cannot grasp all the learning they need on the subject from their teachers inside the class. It is a partnership between the classroom and outside the classroom learning, which make up students' study habits. Ebele and Olofu (2017) added that it is how a student takes his studies that determine his performance. It is on the extent of preparation and the strategies that the students develop and utilized that affect their performance level in the subject.

In general, study habits can be classified as good and bad study habits. Good study habits are the productive ones, which help in improving the academic performance of the students or produce positive results (Bloom, 1984; Ogbodo, 2010). These are the study habits that help the students to be successful in school after developing and using them in their academic career.

For learners to be successful in their studies, they must use strategies that will be effective in improving their performance (Chamot, 2004; DuFour & Mattos, 2013). It is not on the number of hours that makes studying effective but on the strategies used in order to assimilate and reflect on the lessons learned inside the classroom.

However, bad study habits are described by the practice of procrastination, absenteeism, not taking down notes, poor reading habits and studying with distractions like watching TV, studying with friends, listening to distractive music, cramming and studying in cramped conditions. Moreover, Ossai (2011) stressed that lousy study habits are negative or non-productive study habits, which bring adverse effects to the academic performance of the students. Leithwod and Riehl (2003) said that when these habits are developed and used by the students, these will hinder their academic progress and performance.

In the study conducted by Sirmaci (2010) on the Grade 9 students in Erzurum, which investigated the relationship between students' attitudes and their performance in math using Mathematics Attitude Scale, it was found that there was a significant relationship between the attitudes of the students towards mathematics and their performance in math.

Mohamed and Waheed (2011) conducted a study to examine the students' attitude towards mathematics and determine whether there is a gender difference in attitude towards mathematics in a selected school of Maldives. Two hundred secondary students were asked to answer the questionnaire regarding the students' confidence in math and its usefulness as perceived by the students. Results showed that there was a moderately positive attitude of the respondents towards mathematics. However, no significant gender difference was found in their attitudes.

Karjanto (2017) investigated the attitudes of the 108 students in mathematics who are enrolled in Nazarbayev University using the Attitudes Towards Mathematics Inventory (ATMI) by Tapia and Marsh (2004). Results revealed that students have a positive attitude towards mathematics. Further, there was a significant positive correlation between the achievement in math and the attitudes of the students. However, there was no significant difference in the attitudes of the respondents towards mathematics based on gender.

In the study of Bashir and Mattoo (2012), which aimed to determine the impact of study habits on academic performance among the adolescents using the Study Habit Inventory, they found that there was a significant relationship among the variables of study habits and the academic performance of the students. According to the study of Osa-Edoh and Alutu (2012) on the study habits of secondary students using the Study Habit Inventory by Bakare (1977), the study habits of the students were highly correlated with the students' academic performance. Moreover, the difference in the study habits of the students was linked to the reasons that students do not have the idea on the proper way to study while those who manage to study do not use effective strategies in studying.

Choudhury and Das (2012) conducted a study to examine the influence of attitudes and study habits to the academic achievement of the pupils in mathematics. There were 500 students of standard IX from secondary school of South Kamrup, Assam who participated in the study. The results showed that attitudes and study habits were firmly related to the students' math achievement. However, there was no significant difference in the students' math achievement as to their gender and medium of study. Moreover, the results on regression analysis revealed that the attitudes towards and the study habits contributed 15.2% and 29% to the students' math achievement, respectively.

Odiri (2015) studied the relationship of students' study habits and their math achievement in Delta Central Senatorial District, Delta State, Nigeria. Five hundred students were randomly selected from 25 public secondary schools who participated in the said study. Using regression and ANOVA to analyze the data, findings revealed that there was a significant relationship between the study habits and mathematics achievement of the students and a significant difference was found in math achievement between good and poor study habits.

The interplay of the variables, which are anchored on the different theories and literature that could help in developing the concepts that will be molded based on the findings of the study. Hence, an enhancement plan to address the concerns will be used to propose at the end of this study.

OBJECTIVES OF THE STUDY

This study assessed the attitudes, study habits, and performance of the junior high school students in mathematics in a public national high school, Cebu, Philippines as the basis for a math performance enhancement plan. Specifically, it answered the: 1) Profile of the respondents; 2) Level of the performance and study habits of the respondents in Mathematics; 3) Attitudes of the respondents towards Mathematics; and 4) Significant relationship between the performance and their attitudes, and study habits of the respondents.

METHODOLOGY

This study used a descriptive correlational design to determine the relationship of the attitudes, study habits, and performance of the respondents in math. The level of the respondents' study habits, attitudes, and performance in math was assessed before determining their relationship.

The input was the profile of the respondents according to their age, gender, year level, parents' highest educational attainment, combined family monthly income and number of school activities participated. This also included the level of the attitudes, study habits, and performance of the students in math. It also tested the relationship between these variables. The process of the study included the procedures being observed in handling the data. It included administering the questionnaire, the treatment of the data and its interpretation. The output of the study was the proposed math performance enhancement plan.

This study was conducted at in a public national high school, which Mandaue City Division, Cebu, Philippines. The respondents were the 177 Grade 9 students enrolled in mathematics. These respondents were selected using probability random sampling. The tool is consists of three parts. Part 1 gathers the socio-demographic profile of the respondents. Part 2 assesses the attitudes of the respondents towards Mathematics, while Part 3 was used to assess the study habits of the respondents.

Part 1 contains data related to the profile of the respondents such as their age, gender, parents' highest educational attainment, combined family monthly income, and the number of school activities participated.

Part 2 contains statements describing the attitudes of the respondents towards mathematics, which is adopted the ATMI by Tapia and Marsh (2004). This construct is measured using four variables such as Self-confidence, Value, Enjoyment, and Motivation. The Self-confidence in mathematics has 12 indicators with

Table 1. Age and Gender of the Respondents

Age (in years)	Male (n = 70)		Female (n = 107)		Total (N = 177)	
	f	%	f	%	f	%
19 – 20	2	1.13	0	0.00	2	1.13
17 – 18	5	2.83	4	2.26	9	5.09
15 – 16	26	14.69	36	20.34	62	35.02
13 – 14	37	20.90	67	37.85	104	58.76
Ave :	**14.84**		**14.57**		**14.68**	

seven positively worded items and five negatively worded items, while the Value of Mathematics has seven positively worded items. Moreover, Enjoyment in mathematics has nine items with only one reversely worded item. The motivation in math has four items with one reversely worded item. All these indicators were measured using the 5-point Likert scale wherein one being the lowest and five being the highest, which are interpreted as Very Negative Attitude to Very Positive Attitude, respectively.

Part 3 contains questions on the study habits of the respondents. This study used an adapted instrument entitled Students' Study Habits Assessment Scale (SSHAS) by Charles-Ogan and Alamina (2014). It has nine positively worded statements which measured using a 5-point Likert Scale wherein one is the lowest and five is the highest and interpreted as Poor and Excellent, respectively.

To determine the performance of the respondents in mathematics, the researchers utilized the first grading grade mathematics performance of the respondents from the school's Office of the Registrar.

The gathered data were statistically interpreted using the frequency, single percentage, weighted mean, Pearson Product Moment Correlation Coefficient.

RESULTS AND DISCUSSIONS

Profile of the Respondents

This section presents the profile of the respondents in terms of their age, gender, parents' highest educational attainment, combined family monthly income, and several school activities participated.

The age and gender of the respondents are essential variables that need to be considered in this study. The data on these variables are presented in **Table 1**.

As reflected in **Table 1**, most of the respondents were aging from 13 to 14 years old wherein the average age for male and female respondents was 14.84 and 14.57 years old, respectively. It can be noted that the males are older than the female respondents. However, they are still on the ideal age as Grade 9 students in the Philippines where the overall average of the respondents was 14.68 years old. This could imply that most of them started schooling at the right age and were not retained or had stopped schooling in their early grade levels. Even though there were respondents who are significantly older than their expected age, they only comprised the 6.22 percent or 11 out of the total respondents. Abubakar and Oguguo (2011) found in their study that age and gender where significant predictors of the students' achievement wherein 1.3% of the variance of the achievement was accounted for by age and gender.

Parent's Highest Educational Attainment

Another variable that is considered in this present study is the parents' highest educational attainment. Parents can guide their children at home to whatever school tasks are assigned to their children. Given enough knowledge of the parents on the tasks of their children will help them guide their children in accomplishing such tasks. Thus, their educational attainment is relevant to this matter. The data gathered are presented in **Table 2**.

Table 2. Parents' Highest Educational Qualifications

Educational Level	Mother (n = 177)		Father (n = 177)		Total	
	f	%	f	%	f	%
College Graduate	39	22.03	46	25.99	85	24.01
High School Graduate	117	66.10	95	53.67	212	59.89
Elementary Graduate	21	11.87	36	20.34	57	16.10

Table 3. Parents' Combined Monthly Family Income

Combined Income (in PhP)	f	%
Less than 7,890	77	43.50
7,890 - 15,780	75	42.37
15,780 - 31,560	21	11.86
31,560 – 78,900	4	2.26

Table 4. Number of School Activities Participated by the Respondents

Number of Activities	f	%
More than 8	5	2.83
6 - 8	26	14.69
3 - 5	79	44.63
0 - 2	66	37.29
Average :	**3.5**	

The table shows that most parents are high school graduates. Parents are considered as second teachers when students are at home. They are expected to guide their children to accomplish the tasks, which are done at home. However, if parents have limited knowledge of the school tasks, they will not be able to guide their children in doing the task. Parental education had a significant relationship with the students' performance (Dornbusch et al., 1987; Spera et al., 2009). Those students whose parents are educated performed better than those whose parents were less educated. Furthermore, they stressed that the educational attainment of the mother has a significant influence on the student's performance were in those students whose mothers were highly educated had higher academic performance.

Their monthly income can reflect the capability of parents to send their children to school. That is why it is essential to assess their monthly income so it could be the basis for understanding the performance of the respondents in math. Data on this variable is illustrated in **Table 3**.

As reflected in the table, most of the respondents belong to a family below the poverty line. In this case, parents have struggled on sending their children to school because of the financial requirements like the fare of their child is going to school, food or snacks and school supplies that are needed in the child's day to day school tasks. When the child is affected financially, it could have adverse effects on their performance in school because they will feel the stress of having inadequate financial resources. Mayer (as cited in Machebe et al., 2017) observed that the children coming from wealthy families have higher chances of succeeding in their life than those children who are coming from poor families probably because parents of affluent families spend more on the education of their children because they consider this as their "investments" that would lead to a better future for their children.

The school activities to the respondents participated is considered in this study because this could be one of the factors that will affect their performance in math. **Table 4** presents the results of the data gathered.

The study shows that on average, the respondents participated in 3.5 activities in school. This suggests that many of the respondents were active in participating to different school activities which require them to be excused from classes when they have practice on their presentations and in the sports that they are joining since practices are held during class hours.

With too much participation in school activities, students will be left behind in their classes, which is a disadvantage on their part because they have to catch up with the lessons that they had missed. If students are not able to adjust or catch up with the lessons, their academic performance could be affected. Rasberry et al. (2011) conducted a review on the different studies on the relationship between the extracurricular activities and academic performance of the college students. They found that some studies support that extracurricular

Table 5. Performance of the Respondents in Mathematics

Performance Level	Grade	f	%
Outstanding	90 – 100	16	9.04
Very Satisfactory	85 – 89	25	14.12
Satisfactory	80 – 84	55	31.07
Fair Satisfactory	75 – 79	79	44.63
Did not meet the Expectations	Below 75	2	1.13
Average :	**80.93**		

Table 6. Respondents' Study Habits in Mathematics

	Indicators	Mean	StDev	Verbal Description
1	I consider mathematics notwithstanding when I am incredibly drained.	2.85	1.036	Satisfactory
2	I examine mathematics first by choosing what region to contemplate.	3.05	0.858	Satisfactory
3	I ponder math for around 50 minutes and afterward take around ten minutes break before beginning once more.	2.76	0.936	Satisfactory
4	I practice mathematics always with a textbook.	2.94	0.880	Satisfactory
5	I consider mathematics with a friend(s), test one another, share any useful info and foresee test question.	3.40	1.024	Satisfactory
6	In taking care of an issue, I give much consideration to subtleties.	3.28	0.891	Satisfactory
7	I think about mathematics for a long stretch without respect to my timetable.	2.92	0.882	Satisfactory
8	I feel good when I solve mathematics problems by myself.	3.27	1.074	Satisfactory
9	I study mathematics with a high level of concentration.	3.24	1.039	Satisfactory
	Overall :	**3.08**	**0.958**	**Satisfactory**

activities can have adverse effects on students' performance. Moreover, it was pointed out that not all activities have benefits to students' academic development and students' engagement, which vary across activities.

Performance of the Respondents in Mathematics

This section presents the performance of the respondents in mathematics, which are based on their first quarter grades. The results are presented in **Table 5**.

As reflected in the table, the respondents had a satisfactory performance with an average grade of 80.93. These data suggest that the performance of the respondents need to be improved because many of them were just able to pass the subject. If there is no action taken to this situation, those students who are on the threshold line could fail in the succeeding quarters. Thus, it is essential to minimize the activities or factors that would distract their focus on their studies and enhance those that will help improve their performance. According to Baker (2008) claimed that although there is evidence that extracurricular activities have positive effects on academic achievement, it does not consider the effects on the different types of organizations.

Study Habits of the Respondents

This portion shows the results of the study habits of the respondents.

The table shows the overall weighted mean of 3.08 and an overall standard deviation of 0.958. This means that the respondents had satisfactory study habits. The data suggest that the study habits of the respondents need to be improved. With the kind of study habits that they have, it can be seen as one of the reasons for their satisfactory performance in math. Mathematical concepts most of the time involve computations and problem-solving which require students to practice not only in school but also at home that is why teachers usually give assignments to students for them to practice the skills. However, when students are busy with other activities, they will be limited or no time to practice the learned skills.

Sakirudeen and Sanni (2017) found that study habits like notetaking, usage of library, study time allocation influenced the students' academic performance. They further recommended that group guidance should be organized in schools initiated by professional counselors in order to establish awareness on the practical study habits and the provision of a functional library in secondary schools, which could lead to a better performance of the students in math.

Table 7. Self-Confidence of the Respondents in Mathematics

	Indicators	Mean	StDev	Verbal Description
1.*	Mathematics is one of my most hated subjects.	3.23	0.964	Neutral
2.*	My brain goes clear, and I am unfit to think obviously when working with mathematics.	3.10	0.946	Neutral
3.*	Studying mathematics makes me feel nervous.	2.87	1.044	Neutral
4.*	Mathematics makes me feel uncomfortable.	3.12	1.064	Neutral
5.*	When I hear the word math, I have a sentiment of abhorrence.	3.45	1.049	Positive
6.	Mathematics does not scare me at all.	2.94	1.059	Neutral
7.	I have a great deal of fearlessness with regards to mathematics	2.97	0.926	Neutral
8.	I am ready to take care of scientific issues without an excessive amount of trouble.	2.89	1.038	Neutral
9.	I hope to do genuinely well in any mathematics class I take.	3.08	0.815	Neutral
10.	I am befuddled continuously in my mathematics class.	2.92	0.856	Neutral
11.	I learn mathematics easily.	2.89	0.885	Neutral
12.	I believe I am good at solving mathematics problems	2.90	0.989	Neutral
	Overall :	**3.03**	**0.970**	**Neutral**

Note:

* Reverse Wording

Table 8. Value of Mathematics as Perceived by the Respondents

	Indicators	Mean	StDev	Verbal Description
1.	Mathematics is an extremely advantageous and fundamental subject.	3.51	1.000	Positive
2.	I want to develop my mathematical skills	4.13	0.931	Positive
3.	Mathematics builds up the psyche and shows an individual to think.	4.08	0.809	Positive
4.	Mathematics is essential in everyday life.	4.24	0.902	Very Positive
5.	Mathematics is a standout amongst the most important subjects to consider.	4.04	1.002	Positive
6.	High school mathematics courses would be beneficial no matter what I decide to study.	3.79	0.890	Positive
7.	I can consider numerous ways that I use math outside of school.	3.39	0.966	Neutral
	Overall :	**3.88**	**0.929**	**Positive**

Attitudes of the Respondents towards Mathematics

This section exhibits the results on the data gathered regarding the attitudes of the respondents in math, which is measured using the four variables such as their self-confidence, value, enjoyment, and motivation in math.

Generally, the overall weighted mean of 3.03 and a standard deviation of 0.970 means that the respondents had neutral attitudes on their confidence in learning math. With the complexity of the subject, students find it hard to learn math. Thus, their confidence in learning the subject is affected. It is essential to enhance their confidence in learning the subject so that their attitudes towards the subject will also be improved. Neglecting this level of the attitudes of the students in learning the subject could have adverse effects on their performance. That is why teachers should find strategies to enhance students' confidence in learning the subject. In the study of Mohamed and Waheed (2011) on the secondary students who were asked to answer the questionnaire regarding the students' confidence in math and its usefulness, they found that there was a moderately positive attitude of the respondents towards mathematics.

Assessing the perceptions of the respondents on the value of math in their life exhibits their attitudes towards the subject. The table exhibits the assessment on the attitudes of the respondents in math in terms of its value. The overall weighted mean of 3.88 with a standard deviation of 0.929. This indicates that the respondents had positive attitudes in terms of the value of math. Students expressed that math is essential in their life because they can apply these concepts in some of their daily activities. However, these positive attitudes still need to be improved in order to inculcate in them that math is beneficial no matter what the

Table 9. Enjoyment of the Respondents in Mathematics

Indicators	Mean	StDev	Verbal Description
1. I have for the most part appreciated considering math in school.	3.43	0.912	Positive
2.* Mathematics is dull and boring.	3.49	0.930	Positive
3. I like to take care of new issues in mathematics.	3.28	0.942	Neutral
4. I would want to complete a task in math than to compose an exposition.	3.24	0.990	Neutral
5. I like mathematics.	3.21	0.928	Neutral
6. I am happier in a mathematics class than in any other class.	2.92	0.831	Neutral
7. Mathematics is a fascinating subject.	3.44	0.970	Positive
8. I am open to communicating my thoughts on the most proficient method to search for answers for a troublesome issue in mathematics.	3.10	0.931	Neutral
9. I am comfortable answering questions in mathematics class.	3.03	0.899	Neutral
Overall :	**3.22**	**0.926**	**Neutral**

Note:
***Reverse Wording*

Table 10. Motivation of the Respondents in Mathematics

Indicators	Mean	StDev	Verbal Description
1. I am sure that I could learn propelled mathematics.	3.25	1.047	Neutral
2. I might want to abstain from utilizing math in tertiary study.	2.87	0.812	Neutral
3. I will take more than the required measure of mathematics.	3.21	0.825	Neutral
4. I intend to take as much science as I can amid my training.	3.41	0.869	Positive
Overall :	**3.19**	**0.888**	**Neutral**

person's status in life is. Thus, learning the subject is imperative because this is one of the necessary skills that everyone needs in their life at present and in the future.

Another variable that can measure the attitudes of the respondents in math is the extent of enjoyment that this subject brings every time they are engaged in the subject.

As reflected in **Table 9**, the overall weighted mean of 3.22 and an overall standard deviation of 0.926 indicates that the respondents had neutral attitudes when it comes to the enjoyment that math will bring to them. Many students consider mathematics as a boring subject that is why teachers should be able to deliver the lessons interestingly. Many strategies had been studied to introduce math lessons excitingly; however, no one had been identified as the best strategy to teach math. This has always been a challenge to teachers on how to deliver math lessons in such a way that students find the enjoyment of the subject. The nature of the subject dictates that this subject has to be taken seriously by the students because this deals more on analysis and critical thinking.

Moenikia and Zahed-Babelan (2010) pointed out that attitudes of students towards mathematics would affect how well they perform in the subject and how often they engage in the subject. It can also be manifested on the degree of their enjoyment while engaging in tasks related to the subject.

The motivation that the students have in learning math is one of the variables that could measure their attitudes towards the subject. **Table 10** presents the results of the data gathered on the motivation of the respondents in learning math.

The table shows the overall weighted mean of 3.19 with an overall standard deviation of 0.888. This means that the respondents had neutral attitudes in their motivation to learn the subject. Most students cannot relate the importance of math in their life because they think that they need to learn or master the skills in math only when you take up math-related courses in college. They are not aware that in their simple daily activities they are already applying the concepts of the subject. On the other hand, learning the advanced concepts in the subject cannot be applied in their life in the future. Thus, their motivation to learn the subject is low. If the motivation level of the students to learn the subject is low, there will be a tendency that their performance will be affected.

Table 11. Summary Table on Respondents' Attitudes Towards Mathematics

Indicators	Mean	StDev	Verbal Description
A. Self-Confidence	3.03	0.970	Neutral
B. Value	3.88	0.929	Positive
C. Enjoyment	3.22	0.926	Neutral
D. Motivation	3.19	0.888	Neutral
Overall :	**3.33**	**0.928**	**Neutral**

Table 12. Relationship Between Attitudes and Academic Performance in Mathematics

Variables	Pearson r	Strength	p-Value	Decision	Results
Academic Performance in Math and					
A. Self-Confidence	0.227	Weak	0.002	Ho rejected	Significant
B. Value	0.337	Weak	0.000	Ho rejected	Significant
C. Enjoyment	0.213	Weak	0.004	Ho rejected	Significant
D. Motivation	0.114	Very Weak	0.130	Ho accepted	Not significant

Note:
Significant at p<0.01 (two-tailed)

The value of math had the highest weighted mean of 3.88 with a standard deviation of 0.929, which implies that students had positive attitudes on the value of math in their life. However, their self-confidence towards learning the subject had the least weighted mean of 3.03 with a standard deviation of 0.970, which means that the respondents had neutral attitudes on their self-confidence in math. In general, the grand mean of 3.33 and a grand standard deviation of 0.928 indicates that the respondents had neutral attitudes towards math. It can be noted that the respondents had fair satisfactory performance in math. Thus, this performance could be explained by their attitudes in the subject, which revealed that the respondents had neutral attitudes towards the subject. It implies that there is a need to improve their attitudes towards the subject.

Mohamed and Waheed (2011) found in their study on the Maldivian students that there is a positive attitude towards mathematics among the students despite their low performance. However, they posited that these attitudes still need to be improved. Moreover, these attitudes do not vary across the gender of the students.

Test of Significant Relationship

This portion presents the test on the relationship between attitudes and academic performance of the respondents in math. **Table 12** showed the details of the test.

As shown in the table, the test on self-confidence, the value of math, enjoyment in mathematics as well as the motivation of students in math were found to be significant. The computed p-values are less than the critical values of 0.01 at two-tailed. The result suggests that the self-confidence of the respondents were significantly related to their performance in math. It implies that increasing the students' self-confidence could improve their performance in math. As to the value of math, the result implies that if the respondents perceived a higher value for math, the better they perform in the subject. In the case of the enjoyment of the respondents in math, the result suggests that the respondents' enjoyment in math is significantly related to their performance. With the increase in the respondents' enjoyment in math, the better they perform in the subject. Lastly, the test on the motivation of the respondents to learn math and their performance suggests that the performance of the respondents in math is not affected by their motivation to learn the subject.

Generally, the data show a weak positive correlation between the attitude of the respondents and their academic performance. The weak relationship of the variables could imply that the attitudes of the respondents are not the only factor that could influence their performance. Other factors such as their participation in school activities, family monthly income, and their parents' educational attainment can be the intervening factors influencing their performance. It very well may be noticed that the greater part of them belong to low-income families who can affect their financial support while their parents' educational attainment could be the basis on what kind of support will they provide to their children when it comes to their children's academic responsibilities.

Mayer (as cited in Machebe et al., 2017) observed that the children coming from wealthy families have higher chances of succeeding in their life than those children who are coming from low-income families

Table 13. Relationship Between Attitudes and Academic Performance in Mathematics

Variables	Pearson r	Strength	p-Value	Decision	Results
Study Habits and Academic Performance in Mathematics	0.227		0.002	Ho rejected	Significant

Note: Significant at p<0.01 (two-tailed)

probably because parents of affluent families spend more on the education of their children. Moreover, another important variable that can affect the respondents' performance is their participation in different school activities. Engaging in many school activities will distract the focus of the students because of the additional responsibilities that the students have to comply with.

The finding of this study is consistent with the findings of Sirmaci (2010), which found that there was a significant relationship between the attitudes of the students towards mathematics and their performance in math. Moreover, this finding is also supported by that of Karjanto (2017), which found that there was a significant positive correlation between the achievement in math and the attitudes of the students. Be that as it may, there was no unique distinction in the frames of mind of the respondents towards science dependent on sexual orientation.

Study Habits

This portion shows the results of the test on the study habits and academic performance of the respondents in math. The details on the test are presented in **Table 13** for a comprehensive discussion of the results.

As seen in the table, the computed value of r is 0.227, which indicates that the study habits and academic performance of the respondents in math have a negligible positive correlation. Further, the test on the significance of their relationship shows that the p-value of 0.002 is lesser than the significance level of 0.01 (0.002 < 0.01), which indicates that the null hypothesis is rejected. This suggests that the study habits of the respondents contribute to their performance in math. If students have good study habits, they will perform well in the subject. It can be noted that these respondents had a reasonably satisfactory performance in the First Quarter, which needs to be improved. However, they participated in many school activities, which could affect their study habits. Thus, in order to improve the performance of the students there should be monitoring on the number of school activities that they will participate and their grades in order to assess the effects of participating many school activities.

The findings of this study are supported by the study Osa-Edoh and Alutu (2012) which found that study habits are highly correlated with the academic performance of the secondary students. Similar findings were also observed by Bashir and Mattoo (2012) who used the Study Habit Inventory in assessing the students' study habits.

CONCLUSIONS

The study concluded that the attitudes and study habits of the respondents are significant factors that affect their performance in math. Moreover, these attitudes and study habits need to be improved to enhance the students' performance in mathematics. Besides, the students' participation in the school activities needs to be monitored and be considered since this could be another factor that would affect the respondents' performance in mathematics. Too much exposure to these activities may affect their performance in the discipline if not controlled because students who participate in extracurricular activities sometimes miss classes in mathematics.

RECOMMENDATIONS

The researchers recommend that the proposed mathematics performance enhancement plan be adopted and monitored.

Disclosure statement

No potential conflict of interest was reported by the authors.

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