STUDENTS' SELF-CONCEPT: ITS ASSOCIATION TO THEIR ACADEMIC PERFORMANCE IN MATHEMATICS

Alrich Ryan M. Tagalog[1], Romulo G. Doronio[2]

[1] *Student, Graduate School Department, Assumption College of Nabunturan, Philippines*
[2] *Graduate School Professor, Assumption College of Nabunturan, Philippines*

ABSTRACT

This study aimed to determine the relationship between the level of students' self-concept to their academic performance in Mathematics. As an important component of individual psychology, self-concept includes student's perspective of his/her own ability, confidence, and self-worth in the context of learning Mathematics. Through a comprehensive survey and assessment, this study measures students' level of self-concept in Mathematics in terms of attitude, belief and perception, and emotion, and analyzes its influence on their academic performance. The researcher used the descriptive correlational design of research and used a survey questionnaire to gather information coming from the respondents to establish and quantify the relationship between these variables. The respondents of this study were the Grade-10 students of Tupaz National High in the school year 2022-2023. From the data gathered the researcher found out that the level of students' self-concept was moderate and their academic performance was not able to meet the expectation. The study also resulted in the conclusion that there is a significant association between the students' level of self-concept to their academic performance in Mathematics. These findings hold substantial implications for educators, parents, and policymakers. Understanding the role of self-concept in academic performance can inform tailored teaching strategies and interventions aimed at boosting students' confidence and motivation in Mathematics. Additionally, it highlights the importance of fostering a positive Mathematical self-concept from an early age. In summary, this study emphasizes the crucial role of self-concept in shaping students' academic outcomes, specifically in the realm of Mathematics. It contributes to the ongoing discourse on educational psychology and highlights the need for targeted interventions to improve students' self-concept and, in turn, their Mathematical achievements.

Keywords: *self-concept, academic performance, correlational research design*

1. INTRODUCTION

Mathematics is a subject that many students either love or hate (Phillipp, 2007). Many students struggle with Mathematics at some point. Based on the researcher's experience with the students, it was common to hear complaints that they hate Mathematics because, for them, Mathematics is too difficult to handle especially with its numbers, calculations and problem solving. According to Sparks and Sarah (2011), Mathematics is seen unfavorably. This is congruent with the views of many experts who contend that most secondary school learners believe Mathematics to be the most challenging, abstract, dangerous, and tedious subject. Makondo et al., (2020) have additionally observed that as students advance from primary to secondary school, their enthusiasm for Mathematics diminishes due to apprehensions regarding the perceived difficulty of the subject and the potential for it to result in subpar academic performance. McLeod (2008) also added that how successfully or unsuccessfully the learners perform depends significantly on how they perceive themselves.

The issue has led to a thorough examination by many educators and policymakers regarding the factors influencing students' performance in Mathematics, particularly their self-concept towards the subject (Mullis et al., 2016). Armstrong (2009) stated that most people in America saw Mathematics as a complex subject. While solving problems, some respondents viewed Mathematics as a complex subject, while others viewed it as personal development or students taking an interest in advancing Mathematics after solving them. On the other hand, failure leads to a lack of confidence in the subject matter, which is wrong. In a similar study among students at Mavuzani

High School in Zimbabwe by Makondo et al. (2020), the findings also showed that students were underperforming in Mathematics because of the negative attitude they held towards the subject due to fear.

According to the results of TIMSS of 2019 of fourth- and eighth-grade students, the Philippines had low scores at the international level. Therefore, educators and policymakers need to investigate aspects such as the students' self-concepts relating to mathematics that influence their performance. A study by Peteros et al. (2020) assessed the academic performance and the self-beliefs of 100 tenth-grade students in Mathematics at a public school in Cebu, Philippines. It revealed a moderate level of self-concept in learning Mathematics.

Moreover, Tupaz National High School Mathematics teachers identified some of the students' difficulties as they performed poorly in the subject. They pointed to students' passivity during lessons, observing that only a few of them perceived sufficient confidence to contribute to discussions in the class. According to the researchers, students' low average results in Mathematics were directly associated with low self-concept with the subject. Some students perceive Mathematics as complex and something they are incapable of doing, a situation that requires intervention to change their attitude toward learning Mathematics.

1.1 Statement of the Problem

The primary aim of this research is to investigate the relationship between self-concept and academic performance in mathematics among junior high school students at Tupaz National High School. Understanding how students perceive their abilities and how this perception influences their academic success can provide valuable insights for educators and policymakers. This study seeks to identify specific aspects of self-concept that are most closely associated with mathematical achievement, thereby contributing to the development of targeted interventions to improve educational outcomes. The research set out to address the following questions in particular:

1. What is the level of self-concept among junior high school students in terms of:
   - 1.1 Attitude;
   - 1.2 Belief and perception;
   - 1.3 Emotion?
2. What is the academic performance in Mathematics of junior high school students?
3. Is there an association between the level of students' self-concept in terms of attitude and the academic performance in Mathematics among junior high school students?
4. Is there an association between the level of students' self-concept in terms of belief and perception and the academic performance in Mathematics among junior high school students?
5. Is there an association between the level of students' self-concept in terms of emotion and the academic performance in Mathematics among junior high school students?

1.2 Null Hypothesis

In order to treat the problems extensively and answered objectively, the researcher formulated the following hypotheses:

Ho1. There is no significant association between the level of students' self-concept in terms of attitude and the academic performance in Mathematics among junior high school students.

Ho2. There is no significant association between the level of students' self-concept in terms of belief and perception; and the academic performance in Mathematics among junior high school students.

Ho3. There is no significant association between the level of students' self-concept in terms of emotion and the academic performance in Mathematics among junior high school students.

2. METHODOLOGY

2.1 Research Design

This study employed descriptive quantitative research and incorporated the correlational research approach. Creswell, (2014) described descriptive correlational research as a research design that aims to study the correlation between different variables without manipulating or amending these variables. This design can help the researchers determine the extent and type of association or relationship between ideas, which may be valuable to understanding the flow and interaction of a particular phenomenon or group of people.

Moreover, the correlational research design used the correlational statistical method, which gives precise characteristics of the degree of relationship between two or more sets of scores or variables (Creswell, 2012). Therefore, the audience given by the researcher is a factor in the student's self-concept and academic performance in

mathematics, which is the basis for the design selection. From the data that was accumulated, a conclusion was made.

2.2 Research Locale

This study was carried out in the Municipality of Maragusan, Philipines. Maragusan is a town in the Province of Davao de Oro in the Philippines. It was named Compostela Valley and is known as the "Summer Capital of Davao Region". Beautiful terrains, Mountain Tourism, gold sandy terrains, and many water sources dominate the municipality's environment. It is situated in the shadow of Mount Candalaga, and the climate is comparatively cool. It enjoys numerous waterfalls, hot springs, water rivers, and caves, making it a natural treasure trove for tourism. It also boasts several lovely waterfalls, ideal destinations for picnickers and trekking enthusiasts. Some prime waterfalls are Tagbibinta Falls, Pyalitan Falls, and Maramgig Falls. These cascades provide refreshing swimming spots and picturesque settings for visitors to enjoy. The municipality is also known for its hot springs, which are believed to have therapeutic properties. The Mainit Hot and Casilak Hot Springs Resorts are popular destinations for locals and tourists seeking relaxation and healing through the warm, mineral-rich waters.

Barangay Tupas, on the other hand, is one of the mother barangays in the Municipality of Maragusan. Its population is more or less 2000 inhabitants with more than 489 households. Like many areas in Maragusan, Barangay Tupas relies heavily on agriculture as its primary livelihood. The fertile land in the barangay supports the cultivation of various crops such as rice, corn, vegetables, and fruits. The barangay also produces livestock and poultry. Barangay Tupas has a close-knit community that values its cultural heritage. Residents still observe traditional practices and customs, particularly during significant events and celebrations. The barangay actively participates in municipal activities and festivals, showcasing its unique cultural identity.

The research was conducted at Tupaz National High School with School ID number 304213 for Junior High School and ID number 341314 for Senior High School, situated in Barangay Tupas, Maragusan, Davao de Oro, Region XI. The school was named after Barangay Tupas and started its operation on the first Monday of January 1990. However, due to clerical error upon registration and by the Republic Act No. 7505 dated May 18, 1992, the school was known as "Tupaz National High School" and not "Tupas National High School". From the municipal proper, its distance is 14.1 kilometers via Barangay Talian and 10.5 kilometers via Barangay Cambagang, accessible through all types of land transportation. Most of the students, both Junior and Senior High School, come from the neighboring elementary schools of Tupas Elementary School, Talian Elementary School, and Cambagang Elementary School. More than 50% of the school population are 4P's beneficiaries, and 25% are registered as Indigenous People. Most students' means of transportation are public and private vehicles, and the rest walk to school daily.

2.3 Research Respondents

The study respondents comprised 94 Grade-10 students from Tupaz National High School for the academic year 2022-2023. The researcher used universal sampling, a non-probability sampling method that examines the whole group. The students were heterogeneous in composition, making them the perfect subjects of the study.

2.4 Research Instrument

The study used an adapted test questionnaire as a research instrument with two parts. The first part of the questionnaire was a Likert scale for the respondent's level of self-concept that was adapted from the study of Peteros et al. in 2020. The Likert scale comprised ten statements for every three indicators: attitude, belief, perception, and emotion. The respondents rated the statements with four if they strongly agree, three for agree, two if they disagree, and one if they strongly disagree. On the other hand, the second part of the questionnaire was a 40-item multiple-choice Mathematics test. The questions were adapted from Fuertes's (2022) study, "Effects of Modular Distance Learning Modality to the Academic Performance of Students in Mathematics". A table of specifications was also made to distribute the items equally according to the competencies and the different levels of knowledge according to Bloom's taxonomy.

Moreover, students' mean score in the Mathematics quiz was used to measure their academic performance, and it was interpreted according to the Department of Education's Department Order Number 8 Series of 2015, also known as the Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program. Grades below 75% were described as not meeting the expectation, 75%-79% as fairly satisfactory, 80%-84% as satisfactory, 85%-89% as very satisfactory, and 90%-100% as outstanding. To ensure the reliability of the test questionnaire, the

researcher conducted a reliability test among 30 students, and the correlation coefficient between the pre-test and the post-test was 0.76, which means there was a high correlation/reliability.

2.5 Research Procedure

Before any data could be collected, the researcher had to obtain written consent from the school principal and the office of the school division superintendent. The researcher also prepared the Ethics Assent Form since the respondents of this study are of minor age. Further, the researcher used the universal sampling technique, a non-probability sampling method that involves examining the whole group. During the data gathering process, the researcher assured that the respondents were well-oriented about the vital information that they must know in order to avoid further confusion along the process, such as the purpose of the study, who was the person conducting, what was their involvement and how they would benefit from the study.

Indeed, the researcher highly valued the respondents' participation and placed their welfare as their highest priority during the study. Thus, respondents were not forced to participate during the study unless the researcher secured written consent from the respondents for their commitment during the study. Moreover, the researcher checked answer sheets, and results were recorded on a table with confidentiality for further statistical treatment.

2.4 Statistical Treatment of Data

To treat the statistical data, the researcher used the mean to determine the level of students' self-concept and the student's academic performance in Mathematics. Mean was one of the measures of central tendency, defined as the average of the given data and calculated by dividing the sum of given data by the total frequency. On the other hand, Pearson r product-moment correlation was also used to determine if there was a significant association between the independent and dependent variables. A measure of the intensity and direction of association between two variables was assessed on at least an interval scale, and the Pearson r product-moment correlation was defined as a measure of the correlation. The JASP Software was utilized the researcher in order to solve for the mean values and the Pearson r product-moment correlation.

3. RESULTS

3.1 Level of Students' Self-concept in Terms of Attitude

Table 1 presents the level of students' self-concept in relation to their attitude.

Attitude	Mean	Description
I enjoy learning Mathematics.	2.99	Moderate
In my Mathematics class, I understand even the most challenging work.	2.40	Moderate
I have never felt incapable of learning Mathematics.	2.40	Moderate
I am good at Mathematics.	2.10	Moderate
I am capable of making a good grade in Mathematics.	2.20	Moderate
I do extra work to learn Mathematics.	2.30	Moderate
I find Mathematics interesting	2.60	Moderate
Even if the work in Mathematics is hard, I can learn it.	2.50	Moderate
Every question in Mathematics is answerable.	2.52	Moderate
I am sure I can learn the skills taught in Mathematics class well.	2.63	Moderate
Mean	**2.45**	**Moderate**

Table 1: **The Level of Students' Self-concept in Terms of Attitude**

Table 1 shows the level of students' self-concept in terms of attitude. The result shows that the student's level of self-concept in terms of attitude has a mean score of 2.45, interpreted as a moderate level of self-concept, which means that the students have neither negative nor positive attitude in learning Mathematics. Students' interest and confidence in the subject is notable. A moderate attitude indicates that students may be open to improving their skills and understanding of Mathematics. While they may not have an overwhelmingly positive attitude toward the subject, they are not entirely resistant to learning and may be willing to invest effort in improving their performance.

The statement "I enjoy learning Mathematics" got the highest mean of 2.99, interpreted as a moderate level of self-concept. Enjoyment in learning Mathematics may not necessarily translate into consistent practice or application of Mathematical skills outside of the classroom. Students may need regular practice and reinforcement of concepts to perform well on assessments or real-world problem-solving situations. Success in Mathematics often depends on a solid foundation of basic Mathematical skills and concepts. Students who like Mathematics but could be better may be seen to lack foundational knowledge, enabling them to advance to more complex lessons.

On the other hand, the statement "I am good in Mathematics" had the lowest mean value of 2.1, indicating a modest self-concept. This implies that low self-concept in Mathematical competence can lead to perceived competence or lack thereof in Mathematics. This may be due to past Mathematics problems, influences from peers who are good at Mathematics, or society molding how good one should be in Mathematics. Moderate attitudes toward Mathematics may signal a need for additional support and interventions to help students develop a more positive outlook on the subject. This could include providing differentiated instruction, addressing misconceptions, offering personalized learning experiences, and fostering a supportive learning environment.

3.2 The Level of Students' Self-concept in Terms of Belief and Perception

Table 2 provides an overview of the level of students' self-concept in terms of belief and perception.

Belief and Perception	Mean	Description
I usually do well in Mathematics.	2.22	Moderate
Mathematics is more enthusiastically for me than for a significant number of my schoolmates.	2.13	Moderate
I have dependably accepted that Mathematics is a standout amongst my best subjects.	2.27	Moderate
I believe my Mathematical abilities can be improved with time and practice.	2.90	Moderate
Mathematics is an easy subject to pass.	2.10	Moderate
I think my teachers and classmates view me as competent in Mathematics.	2.19	Moderate
I believe I can succeed in Mathematics if I put in enough effort.	2.99	Moderate
When I do Mathematics, I feel confident that I have done it correctly.	2.48	Moderate
It takes me any longer to comprehend Mathematics ideas than the average individual.	1.98	Low
When I have difficulties with Mathematics, I know I can handle them if I try.	2.90	Moderate
Mean	**2.42**	**Moderate**

Table 2: The Level of Students' Self-concept in Terms of Belief and Perception

Table 2 showed that students have moderate self-concept regarding the indicator "belief and perception," with a mean of 2.42. Students with a moderate belief and perception toward Mathematics likely have a realistic assessment of the subject. They may acknowledge the challenges and the potential rewards of learning Mathematics without overly idealizing or dismissing its importance. They may recognize the value of Mathematical skills and concepts while acknowledging areas where they may struggle or find difficulty.

The statement " I believe I can succeed in Mathematics if I put in enough effort" got the highest mean of 2.99, interpreted as a moderate level of self-concept, indicating that students somehow have confidence in learning Mathematics and have a positive perception of the subject. As much as the statement expresses a positive outlook in performing well in Mathematics it also respects hard work. This mixture of optimism and realism can positively influence the efficient and effective process of learning Mathematics.

Conversely, the statement "It takes me any longer to understand mathematics ideas than the average person" received the lowest mean score of 1.98, which is relatively low on self-concept. This means that the beliefs and perceptions students have about Mathematics affect the amount of effort they are willing to put in and the time they are willing to spend learning Mathematics. Students are likely to participate in mathematical activities with a growth orientation. This conduit makes them understand that their skills in this aspect can be developed with the help of proper efforts and practices. Therefore, people are likely to persist when faced with trials, ask for help when it is relevant, and practice effective learning that may lead to enhanced performance.

3.3 The Level of Students' Self-concept in Terms of Emotion

Table 3 displays students' self-concept as regards their emotion.

Emotion	Mean	Description
I feel anxious or stressed when faced with a difficult Mathematical problem.	2.66	Moderate
I feel motivated to overcome obstacles in Mathematics.	2.09	Moderate
I feel frustrated when I struggle to understand a Mathematical concept.	2.80	Moderate
I feel delighted when answering Mathematics questions.	2.46	Moderate
I enjoy the sense of accomplishment when I successfully solve a Mathematical problem.	3.00	Moderate
I feel proud when I solve a challenging Mathematical problem	2.87	Moderate
I am comfortable in Mathematics.	2.65	Moderate
Mean	**2.65**	**Moderate**

Table 3: **The Level of Students' Self-concept in Terms of Emotion**

Based on the data in Table 3, it can be seen that the self-concept, particularly the emotion of the students towards Mathematics, has a mean value of 2. 65, which is not very high but also not very low, which interprets as an average or moderate emotional response. It may suggest that students have happy and sad feelings or positive and negative attitudes towards mathematics. Therefore, they might feel favorable toward some tasks or specific concepts in the subject or overall negative about it but not predisposed to negativity. Students may also use Mathematics in their activities but may not regularly display high motivation or interest. The students may have different levels of interest and approach to Mathematics tasks based on the conditions and context of the topic.

Also, with an average response of 3, the statement "I enjoy the sense of accomplishment when I successfully solve a Mathematical problem" shows a firm conviction of one's emotional ability to learn Mathematics. The pleasure derived from the satisfaction implies that the students were task-oriented towards Mathematics. They got the satisfaction they needed to master Mathematical concepts and solve problems rather than pleasing their teachers. It also caricatures a correct and positive attitude towards Mathematical problem-solving, focusing on the pleasure that stems from Learning and solving Mathematical problems and tackling Mathematical difficulties.

3.4 Overall Level of Self-concept

Table 4 shows the overall level of students' self-concept.

Indicator	Mean	Description
Attitude	2.45	Moderate
Belief and Perception	2.42	Moderate
Emotion	2.65	Moderate
Overall self-concept	**2.49**	**Moderate**

Table 4: **The Overall Level of Students' Self-concept**

Overall, the students' self-concept, which includes their attitude, belief, perception, and emotion, had an average score of 2.49, indicating a moderate level of self-concept. This means that the students might not think of themselves as being born talented in Mathematics, but they also do not regard themselves as utterly unable to comprehend Mathematics. Moderate self-concept implies that there is room for improvement in students' confidence and perceptions of their abilities in Mathematics. With targeted support, encouragement, and positive reinforcement, these students can work towards building a stronger self-concept and achieving more tremendous success in the subject. Moderate beliefs and perceptions are likely reflected in a balanced self-concept in Mathematics. Individuals may have a realistic assessment of their strengths and weaknesses in the subject, with the potential to build confidence and skills through continued learning and practice.

3.5 The level of Students' Academic Performance in Mathematics

Table 5 presents the descriptive statistics of the students' level of academic performance in Mathematics based from their test result.

Factor	N	Mean	Std. Dev	Transmuted Class Proficiency	Rating
Academic Performance	40	16.25	4.137	70%	Did not meet Expectations

Table 5: **The level of Students' Academic Performance in Mathematics**

The table above shows the level of students' academic performance in Mathematics. The result shows that out of 40 items, the average score of 94 students was equal to 15.128 with a standard deviation of 4.661, while the highest score was 31, and 7 was the lowest. The students' transmuted class proficiency was 69%, which was far below the passing rate, and this means that the students did not meet the expectation as per DepEd Order No. 08 s. 2015, also known as Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Curriculum. Students' low academic performance in mathematics can be interpreted in various ways, and it often stems from a combination of factors. Addressing these factors requires a comprehensive approach that includes targeted instruction, supportive learning environments, and interventions to address students' academic, social, and emotional needs.

3.6 Results of Null Hypothesis 1

Table 6 shows the correlation between the students' self-concept in terms of attitude and their academic performance in Mathematics.

Variables	p-value	Correlation coefficient	Remarks	Decision
Attitude Academic Performance	0.000	0.726	Significant / High positive correlation	Reject Ho_1

Table 6: **Association Between Students' Self-concept in terms of Attitude and their Academic Performance in Mathematics**

Table 6 reveals that at a p-value of 0.000, the correlation coefficient between the students' self-concept in terms of attitude and their academic performance is equal to 0.726. This suggests that the two variables have a substantial positive correlation. Consequently, when students' self-concept regarding attitude is high, some students' academic performance is high, while others are low. Thus, the level of students' self-concept in terms of attitude is significantly associated with their academic performance, so the null hypothesis should be rejected. This correlation implies that students with favorable attitudes towards Mathematics generally have higher academic achievement, whereas those with unfavorable views may encounter difficulties achieving satisfactory academic outcomes.

The outcome is consistent with earlier studies showing that students' attitudes and views about Mathematics are critical in influencing their desire, involvement, and determination to master the subject. When students' attitude towards a subject, or learning Mathematics in this case, is positive, that is, seeing Mathematics as valuable, engaging, and relevant, motivation, effort, and self-efficacy to perform better are likely to follow and translate into better grades. On the other hand, adverse effects can be a barrier, including Mathematics anxiety or low self-efficacy, which decreases students' motivation to participate in Mathematics and reduces achievement. This relationship emphasizes the importance of enhancing a cheerful disposition toward Mathematics among the learners to improve outcomes and enhance their performance in the course.

3.7 Results of Null Hypothesis 2

Table 7 presents the association between the students' self-concept in terms of belief and perception, and their academic performance in Mathematics.

Variables	p-value	Correlation coefficient	Remarks	Decision
Belief and Perception	0.000	0.706	Significant / High positive correlation	Reject Ho_2
Academic Performance				

Table 7: **Association Between Students' Self-concept in terms of Belief and Perception and their Academic Performance in Mathematics**

Table 7 shows that the coefficient of students' self-concept regarding their belief and perception toward academic achievement equals 0.706 at a p-value of 0.00. This implies that the two variables are positively related, and this relationship is relatively large. Thus, if students' self-concept regarding belief and perception is high, then some students' performance is either high-performing or low-performing. Therefore, it is concluded that students' self-concept in terms of belief and perception is significantly related to academic performance; hence, the null hypothesis has been rejected. This relation suggests that learners who have positive attitudes about their mathematical capability are more likely to approach their learning with positive and effective attributes and be willing to solve challenging problems. The positive regards might embrace interpreting errors as chances, perceiving the possibility of enhanced abilities, and acknowledging the applicability or importance of Mathematical competencies in their lives. These beliefs and perceptions result in a positive attitude and perseverance toward learning Mathematics, hence, high academic achievement.

On the other hand, students with negative beliefs and perceptions about their Mathematical learning and performance will approach learning with low self-esteem, fear, and an inability to grow in the Mathematics learning domain. They may perceive Mathematics as a complex subject, one that is not important in their lives, or something which they cannot do well hence feeling incompetent doing Mathematics. In this case, the affected students may need to improve academically in Mathematics as they may lose enthusiasm, confidence, and determination to work hard.

In general, this has further confirmed the importance of attitude and perceptions for any level of success that students establish in mathematics, given that a higher positive correlation has been depicted between students' self-concept, specifically within the belief and perception aspect, and academic achievement. Thus, as a result of the given approach, educators can attempt to provide students with a constructive and progressive learning environment in Mathematics that will promote a sense of belief in students' capacities, persistence when challenging tasks are to be solved, and the necessity of adopting growth mindset approaches in teaching Mathematics.

3.7 Results of Null Hypothesis 3

Table 8 presents the association between the students' self-concept in terms of emotion and their academic performance in Mathematics.

Variables	p-value	Correlation coefficient	Remarks	Decision
Emotion	0.000	0.582	Significant / Moderate positive correlation	Reject Ho_3
Academic Performance				

Table 8: **Association Between Students' Self-concept in terms of Emotion and their Academic Performance in Mathematics**

From Table 8, it is observed that for the variable students' self-concept emotion in terms of emotion and their academic performance, the coefficient value of correlation is equal to 0.582 at a p-value of 0.00. This, therefore, suggests that the correlation coefficient between the two is moderately positive, which suggests that when students' self-concept concerning emotion is high, the student's academic performance is also high, and others are low. Therefore, a correlation exists between students' emotions as part of self-concept and their academic performance in Mathematics, meaning the null hypothesis is rejected.

It could be deduced that when students feel positive emotions like enjoyment, enthusiasm, and confidence concerning Mathematics, they are likely to exhibit better academic performance than students who feel negative emotions like anxiety, frustration, and disengagement towards Mathematics. Positive emotions toward Mathematics encourage learning through developing motivation, curiosity, and the desire to learn more about Mathematics. If students have positive attitudes towards Mathematics, they will have positive attitudes towards learning tasks, put effort into learning exercises, and persist through difficulties, thus enhancing their performance. On the other hand, adverse effects like fear of Mathematics or anger can distract students from focusing, understanding, and applying

Mathematical problems and theories in the classroom, affecting their performance in Mathematics. This correlation underlines the need to consider students' emotional situations and focus on creating positive emotions in Mathematics to foster students' success.

3.9 Results of Null Hypothesis

Table 9 presents the overall correlation between the students' self-concept and their academic performance in Mathematics.

Variables	p-value	Correlation coefficient	Remarks
Self-Concept	0.000	0.793	Significant / High positive correlation
Academic Performance			

Table 9: **Association Between Students' Self-concept and their Academic Performance in Mathematics**

The table above shows that the overall students' self-concept has a positive correlation with the students' academic performance in Mathematics, with a correlation coefficient of 0. 793 and a p-value of 0.00. This research pointed out a firm positive relation between students' self-concept and academic performance, indicating that how students view themselves concerning mathematics correlates with academic achievement in mathematics. From this, it can be deduced that learners with a positive self-concept dealing with beliefs, perceptions, attitudes, and emotions about Mathematics show higher performance in the subject than those with a negative self-concept that lowers learning and academic achievement.

Students with a positive self-concept experience higher mathematical self-efficacy and can handle mathematical tasks more confidently and with greater motivation and effort. They can persevere and, therefore, perform better in mathematics. This combination magnifies the importance of a positive self-concept for enhancing the performance of these students. It underlines the importance of students' self-concept as a determinant of their success in Mathematics coursework.

4. CONCLUSIONS

Based on the data supplied in the preceding chapter of this study, the researcher has determined that the student's self-concept is moderate. However, their academic performance needs to improve. Additionally, it was shown that there is a considerable correlation between students' self-concept and their academic achievement. Consequently, the study's assumptions have been disproven, concluding that there is a correlation between students' self-concept and academic performance. While there is a correlation between students' self-concept and their academic achievement, it is important to note that bad academic performance is not only caused by a weaker self-concept. However, the study may conclude that the student's self-concept contributes to academic performance. How the students think, feel, act, value, and evaluate their ability in Mathematics could affect their performance in the subject.

Following are some recommendations that have been formulated based from the conclusions that were made from the findings of the study:

1. To the students, even though they have a moderate level of self-concept, it is still possible for them to improve their self-concept by altering their negative perspective regarding Mathematics. Moreover, they require support from their teachers and fellow learners to shore up their Mathematical skills and ultimately transform how they view themselves in the content area.
2. To Mathematics teachers, offer students the positive learning experiences that assist in changing their self-concept of mathematics positively. It can involve explaining Mathematical materials concerning real-life situations and issues, employing of concrete aids and equipment that are useful in consolidating the basic concepts, or recognizing chances for students to be granted authority to be leaders and designers or to devise on their own Mathematics projects. Teachers should also instruct students on specific scaffolding methods that enable them to manage Mathematics tasks that are both germane and appropriately challenging. It is done to improve the students' prospects to excel in their endeavors. Besides this, it is also crucial for teachers to offer students the chance of success, positive feedback, and appeal to motivation, as well as the amendments of misconceptions or misunderstandings, as well as the aspects of growth promotion and positive emotional climate in Mathematics.

3. The School Administrators should consider of engaging in a Mathematics enhancement program to be offered as part of the class program, this might be helpful to the identified students who struggle to cope with Mathematics. It is also suggested that each school administrator design an activity to teach mathematics teachers how to handle students with low self-concept. This also involves capacity building and sensitization of teachers about how the kind of language they use and the non-verbal communication they exhibit affect the students' self-perceptions, which would further help in improving the environment in the class.
4. Concerning the implications of the evidence presented herein, educational institutions should develop self-concept enhancement programs focusing on Mathematics education. Such programs could be directly structured, including activities and interventions to promote positive thinking and reduce negative self-images and feelings. This means that when these students' beliefs are targeted, focusing on a sense of competence, their academic performance will be a beneficiary of these programs. However, the results also demonstrate that these programs can have a beneficial effect, as far as the students' beliefs in their capacity are concerned, and this sense of competence does translate to better performances.
5. As for future researchers, it would also be helpful to conduct researches to find out how the self-concept constructs in students change over the years and what effects it has on learning outcomes in the long term. Moreover, using different cross-validations in different educational institutions and culturally different groups enhances the possibility of getting more generalized results. It contributes to a deeper understanding of the relationship between self-concept and Mathematical performance.

5. ACKNOWLEDGEMENT

The authors would like to express their most sincere gratitude to everyone who contributed to the success of this study or helped make it possible. Thank you to their families for the unwavering love and support they have shown them from that time until the present, both financially and emotionally. To the Department of Education for granting permission for the research study to be carried out, as well as to the individuals who participated in the study for willingly contributing their time. Above all else, the researchers would like to express their gratitude to God Almighty for providing them with the blessings, wisdom, direction, and strength that they needed to finish the study. This achievement is a manifestation of Your divine favor.

6. REFERENCES

[1]. Armstrong, P.(2009). The Impact of Teacher Characteristics on Student Performance:An analysis using Hierarchical Linear Modelling .Newbury Park:Sage and Paul Chapman Publishing.

[2]. Creswell, J. W. (2014). A concise introduction to mixed methods research. SAGE publications.

[3]. Creswell, J. W. (2012). Educational research: planning, conducting, and evaluating quantitative and qualitative research. Boston: Pearson

[4]. DepEd Order No. 08 s. 2015. Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Curriculum.

[5]. Fuertes, A. (2022). Effects of modular distance learning modality to the academic performance of students in mathematics. Assumption College of Nabunturan.

[6]. McLeod, S. A. (2008). Self concept. Simply psychology.

[7]. Mullis, I. V. S., Martin, M. O., Foy, P., & Arora, A. (2016). TIMSS 2015 international results in mathematics. Chestnut Hill, MA: TIM

[8]. Peteros et al. (2020). Factors affecting mathematics performance. International Electronic Journal of Mathematics Education, e-ISSN:1306-3030. 2020, Vol. 15, No. 1, em0556, https://doi.org/10.29333/iejme/5938

[9]. Philipp, R. A. (2007). Mathematics teachers' beliefs and affect. In F. Lester (Ed.), Second handbook of research on mathematics teaching and learning (pp. 257–315). Reston, VA: National Council of Teachers of Mathematics.

[10]. Sparks &Sarah,D. (2011). Maths Anxiety Explored in Studies. Sirtzs Researcher web.

[11]. TIMS 2019 l EIA. Trend in International Mathematics and Science Study by the International Association for the Evaluation of Educational Achievement (EIA). https://www.iea.nl/studies/iea/timss/2019

[12]. VaraidzaiMakondo, P., & Makondo, D. (2020). Causes of poor academic performance in mathematics at ordinary level: A case of Mavuzani High School, Zimbabwe. International Journal of Humanities and Social Science Invention (IJHSSI), 9(1), 10-18.