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Region IX, Zamboanga Peninsula
College of Teacher Education
ZAMBOANGA PENINSULA POLYTECHNIC STATE UNIVERSITY
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"Investigating Relationships between Self-concept and Attitude towards Mathematics among Pre-service Teachers"

Researchers
FELIX, CALVIN KLEIN H.
ALVAREZ, LYCA L.
ISMURAJAN, FAULA C.
ROSAS, KAREN D.
SAMLANI, ALSANI
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ABSTRACT

Mathematics is connected to other school subjects. As future educators, learning Mathematics builds mental discipline and reasoning, and provides the foundation knowledge in understanding and teaching the content of other subjects such as Engineering, Economics, Science, Music, Automotive, Drafting and other technical subjects. Thus, developing and maintaining a positive self – concept and attitude towards Mathematics is essential for pre-service teachers. This study therefore, investigated the relationship between self-concept and attitude towards Mathematics among the pre-service teachers. There were three research questions and one hypothesis guided the study. This study utilized descriptive survey design. Two hundred four pre-service teachers from a selected university in Zamboanga City were randomly selected through proportionate and systematic sampling procedures. This study adapted two research instruments, Self-Description Questionnaire (SDQ II) by Herbert W. Marsh and Attitude towards Mathematics Inventory (ATMI) by Martha Tapia and George E. Marsh. The research instructor and subject matter experts validated these, and both attained acceptable reliability coefficients during the pilot testing based on the computed Cronbach's alpha. Mean, standard deviation and Pearson – r correlation were utilized in the analysis of the data. Findings revealed that there was a significant relationship between self-concept and attitude towards mathematics. Findings also indicated that the pre-service teachers has a positive self-concept and positive attitude towards mathematics. This study recommends that math teachers in the higher education must create a learning environment that can foster positive self – concept and attitude towards Mathematics among pre-service teachers.

Keywords: Self-concept, Attitude, Mathematics and Pre-service Teachers

INTRODUCTION

Mathematics has always been perceived as one of the most challenging subject to study, so a positive attitude towards mathematics is essential. The attitude, according to Allport (1936), is a psychological or mental readiness state that is established as a results of expert and has a leading or dynamic effect on person's attitudes towards all things circumstances in which he or she has been involved (Freedman, Sears and Carlsmith, 1989). Attitude can positively or negatively affect student's behavior, including the effort to learn and persistence when faced with challenges and engagement in lectures. The self-concept is one of the most significant and stable indicators of affective student behavior (Bloom, 1995). Self-concept is a key attribute to consider in the fields of accomplishment and self-evaluation of one's skills. It is also regarded as a critical feature of personality (Rogers, 1982). There is a clear correlation between specific self-concept and success in a particular academic discipline in notion to the self-motivation theory (Bandura, 1986; Marsh&Hau, 2003). While students' cognitive abilities and home backgrounds are important factors in achievement, other affective variables such as attitudes and motivation also play a role, according to Singh et al. (2002).

In a particular academic discipline, mathematics self-concept is crucial component of mathematical literacy that reflects the students understanding or confidence in their ability to do well in mathematics (e.g., Jacobs et al., 2002; wigfield & Eccles, 2000) and the self-concept is an individual thinks, feel, acts, values, and evaluates himself/herself in relation to performance in mathematics. Mathematics self-concept is also identified as student's mathematical skills, abilities, enjoyment, and interest in mathematics education. The aggregated measure of liking or disliking mathematics as a tendency to engage in or avoid mathematics activities is known as attitude. In regards to mathematics attitudes, students defines their organized predisposition to think, feel, perceive and behave towards mathematics (Jovanovich & King, 1998) with the subscales of self-confidence, enjoyment, motivation and value. Several studies have found that attitude are an essential variable to consider when attempting to understand and explain variability in student's math results. Whether positive or negative attitude towards mathematics, it would reflect on one's math self-concept. A positive attitude had been associated with higher achievement and self-concept. In contrast, a negative attitude appears to relate poor performance, which indicates that many students fail in mathematics because of the fact that they have low self-concept and poor study habits. As a consequence, having a low math self-concept indicates that the individual is unprepared to deal with the demands of stressful math situations and when the students has a high math self-concept it will lead to happiness and academic achievement. In this study, we choose the pre-service teacher of College of Teacher Education in Zamboanga Peninsula Polytechnic States University to be our respondents and we want to know their level of Math Self-concept and Attitude toward Mathematics as well as their positively and negatively respond in the subject. We need to change first the self-concept and attitude of the pre-service teacher towards mathematics because if they are already in the field they will really encounter student's with negative perception and negative attitude in mathematics. Since it is perceived by many students that mathematics is boring, difficult and one of the most challenging subject to study. In

teaching, they they need to be flexible in all aspects not just in other subjects but also in mathematics. Because even if they are a pre-service teachers in other courses they still need to use and apply mathematics on their work to compute the grades of their students as they become a future teacher and mathematics has also a vital role in our daily lives.

The importance of this study is to understand student's attitudes towards mathematics and math self-concept which is important to give us insights into how does it affects academic performance among pre-service teachers. As well as to obtain certain reasons why they have positive/negative attitude towards mathematics and the correlation between mathematics attitudes and math self-concept.

Statement of the Problem

	(5)	(4)	(3)	(2)	(1)	(5)+(4)	(3)	(2)+(1)
1. I look forward to mathematics classes	25	91	76	8	0	116	76	8
2. I hate mathematics	8	19	61	79	33	27	61	112
3. I do badly in tests of mathematics	10	39	103	46	2	49	103	48
4. I often need help in mathematics	41	85	68	5	1	126	68	6
5. Mathematics is one of my best subjects	22	42	94	35	7	64	94	42
6. I never want to take another mathematics course.	8	42	91	51	8	50	91	59
7. I get good marks in mathematics	15	61	102	19	3	76	102	22
8. I have always done well in Mathematics	5	54	112	25	4	59	112	29
9. I have trouble understanding anything with mathematics in it	16	47	108	25	4	63	108	29
10. It's important to me to do well in mathematics classes	41	110	46	3	0	151	46	3

This study seeks to determine the relationship between math attitude and self-concept in Mathematics among pre-service teachers of the college of Teacher Education of Zamboanga Peninsula Polytechnic State University.

Specifically, this study seeks to answer the following questions:

Research problem 1: what is the level of self- concept of pre-service teachers?

Legend: Strongly Disagree (1); Disagree (2); Neutral (3); Agree (4); Strongly Agree (5)

Table 2
Level of Self-Concept

	Mean	SD
Self - Concept	3.5073	0.5802

As analyzed, upon determining the level of self-concept among the pre-service teachers it has shown that it goes to positive skewed as being graphed which means that the respondents embodies themselves on self-concept.

It means that the self-concept of the pre-service teachers amongst the ZPPSU has an average Self-concept or they have an outer view for themselves.

The self-concept is an important term for both social and humanistic psychology. Lewis (1990) suggests that the development of a concept of self has two aspects:

The Existential Self, This is 'the most basic part of the self-scheme or self-concept; the sense of being separate and distinct from others and the awareness of the constancy of the self' (Bee, 1992).

The Categorical Self, Having realized that he or she exists as a separate experiencing being, the child next becomes aware that he or she is also an object in the world.

Carl Rogers (1959) believes that the self-concept has three different components:

• The view you have of yourself (self-image)

Self-image (how you see yourself) this does not necessarily have to reflect reality. Indeed a person with anorexia who is thin may have a self-image in which the person believes they are fat.

• How much value you place on yourself (self-esteem or self-worth)

Self-esteem (the extent to which you value yourself) Self-esteem (also known as self-worth) refers to the extent to which we like, accept or approve of ourselves, or how much we value ourselves. Self-esteem always involves a degree of evaluation and we may have either a positive or a negative view of ourselves.

• What you wish you were really like (ideal-self)

Ideal Self (what you'd like to be) If there is a mismatch between how you see yourself (e.g., your self-image) and what you'd like to be (e.g., your ideal-self) then this is likely to affect how much you value yourself.

Self-concept captures a person's 'perception of himself', and these perceptions are thought to influence the ways in which he acts, and his acts in turn influence the ways in which he perceives himself. (Shavelson, Hubner, & Stanton, 1976)

Students base their mathematics self-concept largely on their experiences and history of achievement, and this self-concept is a crucial component in pursuing a career in a STEM field, as students with low levels of self-concept do not believe that they will perform well in this area (Bong & Skaalvik, 2003; Louis & Mistele, 2012; Pajares & Miller, 1994; Usher, 2009).

Research problem 2: What is the attitude of the pre-service teachers toward math?

a. Self-Confidence
b. Value
c. Enjoyment
d. Motivation

	5	4	3	2	1	(5)+(4)	3	(2)+(1)
MA1. I am comfortable expressing my own ideas on how to look for solutions to a difficult mathematics experiment.	0	94	62	7	1	94	62	8
MA2. A strong mathematics background could help me in my professional life.	78	96	24	2	0	174	24	2
MA3. I am comfortable answering questions in mathematics class.	15	80	94	10	1	95	94	11
MA4. I am willing to take more than the required amount of mathematics.	21	76	86	17	0	97	86	17
MA5. I am happier in a mathematics class than in any other class.	19	42	99	39	1	61	99	40
MA6. Mathematics is a very interesting subject.	49	83	61	6	1	132	61	7
MA7. I would prefer to do an experiment in mathematics than to write an essay.	28	46	85	33	8	74	85	41
MA8. I believe studying mathematics helps me with problem solving in other areas.	57	104	37	2	0	161	37	2
MA9. The challenge of mathematics appeals to me.	33	106	54	7	0	139	54	7
MA10. I plan to take as much mathematics as I can during my education.	19	86	71	23	1	105	71	24
MA11. Mathematics is one of the most important subjects for people to study.	88	76	32	4	0	152	32	4
MA12. Mathematics helps develop the mind and teaches a person to think.	85	97	18	0	0	182	18	0
MA13. I want to develop my mathematics skills.	119	69	11	1	0	188	11	1
MA14. Mathematics is important in everyday life.	120	63	16	1	0	183	16	1
MA15. I get a great deal of satisfaction out of mathematics experiments.	29	84	79	8	0	113	79	8
MA16. High school mathematics courses would be very helpful no matter what I decide to study.	55	108	33	4	0	163	33	4
MA17. I can think of many ways that I use mathematics outside of school.	39	113	43	5	0	152	43	5
MA18. Mathematics is a very worthwhile and necessary subject.	67	98	33	2	0	165	33	2

MA19. I think studying advanced mathematics is useful.	94	83	20	3	0	177	20	3
MA20. I believe I am good at mathematics experiments	13	36	106	39	6	49	106	45
MA21. I expect to do fairly well in any mathematics class I take.	23	91	77	8	1	114	77	9
MA22. I am able to do mathematics experiments without too much difficulty.	8	47	99	40	6	55	99	46
MA23. I have a lot of self-confidence when it comes to mathematics	11	49	93	39	8	60	93	47
MA24. I like to do new experiments in mathematics.	21	63	83	28	5	84	83	33
MA25. I learn mathematics easily.	8	50	95	39	8	58	95	47
MA26. I would like to avoid using mathematics in college.	4	23	77	71	25	27	77	96
MA27. I really like mathematics.	28	47	101	19	5	75	101	24
MA28. It makes me nervous to even think about having to do a mathematics experiment.	18	85	82	12	3	103	82	15
MA29. Mathematics makes me feel uncomfortable.	11	37	73	67	12	48	73	79
MA30. Studying mathematics makes me feel nervous.	19	64	82	26	9	83	82	35

Table 2
Level of Math Attitude

Math Attitude Subscale	Mean	SD
Self - Confidence	3.1324	0.4712
Values	3.2048	0.2835
Enjoyment	3.1092	0.451
Motivation	3.5457	0.5635
Overall	3.248	0.4016

The average results of math attitude subscales has a positive outcome that runs the skews towards positive quadrant, the students attitude towards math is most likely not as hated as we've thought of. The overall conclusion of math attitudes of the pre-service teachers of ZPPSU have shown that the average has a good attitude towards math.

Teachers frequently utilize attitudes to explain their students' success or failure, as well as to provide an excuse for not being able to assist a student (Martino & Zan, 2010, 2009; Polo & Zan, 2006).However, due to uncertainty in the concept of attitude and a lack of suitable methods to evaluate attitude, no significant correlation between attitude and achievement has been established (Ma & Kishor, 1997).

The students' perceptions of themselves as learners are inextricably linked to their general attitudes regarding the discipline in question. Because mathematics is a highly valued subject in school, students who achieve proficiency in this subject are rewarded. It has been discovered that students' attitudes about mathematics and about themselves as math students play a critical impact in their mathematics learning and success (e.g. Schoenfeld 1992)

Perhaps the most important factor which influences mathematics success levels of students is the students' attitude towards mathematics classes. It has been widely known for a very long time that there is a high-level relationship between mathematical success levels and attitudes towards mathematics. In the studies conducted so far, it has been suggested that students with higher positive attitudes towards mathematics also have higher levels of success (Aiken, 1970 Erktin, 1993; Peker & Mirasyedioğlu, 2003; Çanakçı & Özdemir, 2011).

Research problem 3: Is there a significant relationship between the math attitude and self-concept?

Table 3
Level of Math Attitude and Self-concept Correlation

Subscales	**R value**	**P-value**	**Description**
Self-confidence and self-concept	R is 0.7391	0.00001 < 0.05	This is a moderate positive correlation, which means there is a tendency for high X variable scores go with high Y variable scores (and vice versa).
Value and self-concept	R is 0.7767.	0.00001 < 0.05	This is a strong positive correlation, which means that high X variable scores go with high Y variable scores (and vice versa).
Enjoyment and self-concept	R is 0.9126	0.00001 < 0.05	This is a strong positive correlation, which means that high X variable scores go with high Y variable scores (and vice versa).
Motivation and self-concept	R is 0.9951	0.00001 < 0.05	This is a strong positive correlation, which means that high X variable scores go with high Y variable scores (and vice versa).
Math attitude and self-concept	R is 0.9592	0.00001 < 0.05	This is a strong positive correlation, which means that high X variable scores go with high Y variable scores (and vice versa).

The conducted analysis in terms of correlations between self-concept and math attitude and to its subscales does not differ from each other as it is being presented on the table.

To show the correlation between math attitude and self-concept we've used the Pearson *r* correlation it's the most widely used correlation statistic to measure the degree of the relationship between linearly related variables. For example, in the problem no. 3, if we want to measure how math attitudes and self-concept are related to each other, Pearson *r* correlation is used to measure the degree of relationship between the two. For the Pearson *r* correlation, both variables should be normally distributed (normally distributed variables have a bell-shaped curve).

On description upon conducting the correlation tool the math attitude and self-concept has a positive correlation, which means that high X variables scores go with high Y variable scores in vice versa.

It is critical for pupils to become skilled in mathematics in today's fast-paced environment, where they deal with information generated by computers and calculators as well as mental estimates of everyday transactions. Learners must not only deal with a wide range of operational abilities to complete tasks, such as computing decimals, percent's, and fractions, but they must also grasp fundamental numerical ideas to succeed in a variety of commercial and workplace scenarios. At the same time, citizens must develop self-efficacy, feel good about themselves, and accept responsibility for their actions in order to deal effectively with these duties.

Attitudes toward mathematics and issues of self-concept

Unfortunately, many pupils lack confidence in their mathematics problem-solving skills.

Learners at all levels of education are believed to have a negative attitude toward discipline. Tobias (1978), Kelly and Tomhave (1985), and Stodolsky (1985) investigated the fear of answering mathematical problems in class and/or taking mathematical examinations, and found that it frequently rises to a level known as mathematics anxiety.

People who have a negative attitude about mathematics are more likely to have a low self-esteem and feelings of incompetence. Even if "self-evaluation and anxiety levels are not accurate assessments of their abilities," these attitudes show themselves in ego statements and a never-ending lack of achievement in mathematics (Tobias, 1978), (Gourgey, 1984).

THEORETICAL FRAMEWORK

The self-concept and attitude theories have a wide range of dimension, variables, processes and impacts and numerous model had been constructed based on this. The earliest theory of self-concept is by Rene Descartes, the concept of the self revolves around the idea of mind-body dualism. In other words, for Descartes it is the mind that makes us human. Thus, the mine is the real self. He also said that person's existence is based on how he perceive so. Self-concept is broadly define as person's perception of him/herself. One of the basic assumption of self-concept theory that talks about the internal, mental process by Sigmund Freud is that self-concept is learned. Meaning no person is born with Self-concept it is believe to

develop as person grows older and it can affect environmental. In this, Self-concept is a product of socialization and development. Self-concept is formed especially by evaluation, by significant other, reinforces and attribution for one's own behavior. (Shavelson, Hubnerand & Stanton, 1976). Similarly, the Attitude theory of Martin Fishbien, 1975 they presented Attitude-behavior model. That state a particular event triggers an attitude.

According to the paradigm, an individual's self-concept, attitude, and academic achievement are all influenced by how he or she thinks and acts. The Shavelson's model is made up of two parts: an academic and a non-academic self-concept. According to Hansford and Hattie (1982), a meta-analysis of hundreds of studies found that while some studies found a substantial positive link between self-concept and performance, others found a negative relationship, particularly those that used more rigorous research designs. Similarly, it has been reported in other studies in Nigeria and other parts of the world that there is a positive correlation between math attitude and math achievement. Students who have a negative attitude toward mathematics are more likely to have a low self-concept and a sense of ineptitude, which manifests itself in disparaging statements and a complete lack of achievement in mathematics (Tobias, 1999).

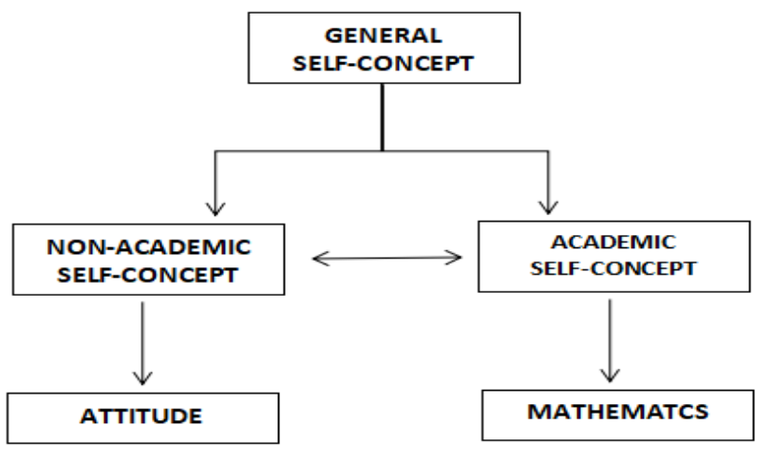

Figure 1: *Academic Self-Concept and Attitude Model*

Source: *Adapted from Shavelson, Hubner & Stanton (1976)'s Model of Academic Self-Concept*

LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this section is to review related literature on the math self-concept and attitude towards mathematics. The review explored valid research findings and views relating to students math self-concept and attitude. Academic performance is very important in identifying student self-concept and attitude towards a subject area like mathematics.

The study focuses on the review of the literature on the significant correlation of

math self-concept and math attitude. This section contains definition of self-concept and attitude and the significant correlation of math-self-concept and math attitude.

2.3 MATH SELF CONCEPT AND MATH ATTITUDE

Math Self-Concept- Because of its connection to academic achievement, self-concept is an essential construct in education. (Byrne, 1984; Valentine, Dubios&Cooper, 2004). A person's self-concept is their perception or view of themselves as a result of their experiences. Self-concept is defined as "life's awareness of itself."(Fromm, 1956). According to (Constantine and Blackman, 2002) Based on specific situations and experiences, they determined aspects of a person's self-concept. Self-concept is defined as a.) Organized or structured self-perception based on experience and the meaning connected with those experiences, b.) Multifaceted feelings or events (personal, familial, and societal), and c.) Stable and established view point. Researchers have been working on identifying the construct of self-concept for a long time. The literature suggests two fundamental aspects of the sel-concept: "the self as a doer" and "the self as an object." (Hamachek, 2000; James, 1898). Took an approach of “the self as a doer” to choose single item, “I usually do well in mathematics in his TIMSS data analysis (Wilkins, 2003; p.7) the math self-concept is defined as a student's particular ideas regarding his or her mathematical skills. (Maharta, 201). This indicates that the students' confidence in doing mathematics will have an impact on them. According to (Bayanga & Wedesango, 2014) they came to the conclusion that one's self-perception is important in math learning.

Math Attitude- Attitude is a psychological orientation that develops as a result of one's experiences and shapes one's perception of a situation, object, or person, as well as how to respond to them positively or negatively, favourably or unfavourably. (Mensa et al, 2013). An attitude is a collection of thoughts, feelings, or actions directed at a specific object. (Vaughan & Hogg, 2005). Bandura's social learning theory states that people learn their attitudes by observing, imitating, and modelling other people's behaviour. The aggregated measure of liking or disliking mathematics as a tendency to engage in or avoid mathematics activities is known as attitude toward mathematics. A belief in one's ability to do well or poorly in mathematics, as well as a belief in its usefulness or uselessness. (Neale, 1969; Ma & Kishon, 1997; p.27). The following evaluative techniques can be used to categorize student attitudes towards mathematics starting to a.) Emotions elicited by mathematics; b.) Emotions evoked by the idea mathematics; c.) Evaluation of the repercussions of doing mathematics; and d.) Mathematics' value in achieving one's future goals (Hannula, 2002). The negative attitude is evident in the fact that students may avoid mathematics and strive to avoid it at all costs. A positive attitude toward a subject is an important educational outcome that should be cultivated regardless of the student's academic achievement level. Students should be assisted to bring out their best abilities.

2.3 CORRELATION BETWEEN MATH SELF CONCEPT AND MATH ATTITUDE

This correlation between self-concept and attitude is in with the findings (Fennema and Shermaan, 1976; Vale and Leder, 2004; Bryant, 2015; Adown, 2016). The variables are correlated because of the student’s lack of positive disposition towards mathematics which of course affects their performance in the subject. It is well established that a negative attitude toward mathematics and a low self-concept have an impact on mathematics performance and even academic success in math-related topics in

school. Students' poor mathematics performance resulting too many students fail in mathematics due to a lack of self-concept, poor study habits, and a negative attitude toward the subject.

RESEARCH DESIGN

This research have used a quantitative design projects that involves a large sample sizes, concentrating on the quantity of responses. When you consider how the researcher plans for control of the variables in the investigation, it's easier to grasp the various forms of quantitative analysis designs. If the researcher thinks of quantitative design as a spectrum, the design at one end of the spectrum is one in which the variables are not monitored at all and are only observed. Only the relationships between variables are defined. On the other hand, designs that involve a tight control of variables and clearly defined relationships among those variables are at the other side of the scale.

The data, relationships, and distributions of variables are studied only. Variables are not manipulated; they are only identified and are studied as they occur in a natural setting.

When you want to examine the prevalence of some outcome at a certain moment in time, a cross-sectional study is the best choice. It is when we wanted to know how many males and females are in our responses and in other profiling structures.

Systematic random sampling has also been conducted in this design, it is the random sampling method that requires selecting samples based on a system of intervals in a numbered population. It is when have defined and listed our population in unordered and non-alphabetical manner and then we've decided to calculate our interval by dividing our population over the target sample size, and we've chosen our sample/respondents after we've conducted an interval in a whole population.

PARTICIPANTS OF THE STUDY

The study participants will be comprised of Pre-Service Teachers of the College of Teacher Education of Zamboanga Peninsula Polytechnic State University.

POPULATION AND SAMPLING PROCEDURE

POPULATION: PRE-SERVICE TEACHER OF CTE, ZPPSU

Courses in CTE	1st	2nd	3rd	4th	N	%	n
BPED/BSED MAPEH	46	82	89	37	254	22.3	45
BTLED/BSED TLE	65	68	50	32	215	18.9	38
BSED-MATH	41	41	34	0	116	10.2	20
BEED	75	87	60	42	264	23.2	46
BTVTED/BTTE	125	83	77	5	290	25.4	51
TOTAL	352	361	310	116	1139	100	200

In this case the researchers used stratified random sampling it's a method of sampling from a population which can be partitioned into subpopulations.

RESEARCH INSTRUMENT

The researchers have created a survey form questionnaire based on an extensive literature review to achieve the study's objectives.

Math Self-Concept Questionnaire. The Self-Description Questionnaire (SQD II) (Marsh, 1990) which has five point Likert scale (1= Strongly Disagree; 5= Strongly Agree) It only consist of 10 items question for math self-concept questionnaire.

Mathematics Attitude Questionnaire. The Attitude towards Mathematics Inventory (ATMI) which has also five point Likert scale (1= Strongly Disagree; 5= Strongly Agree). It is consist of 30 items question with four subscale namely, Self – Confidence, Value, Enjoyment and Motivation.

These two questions will be combined into a single survey. There were 40 questions in total. The questionnaires will be validated by College of Teacher Education professors, including our Research 2 professor. If a statement or suggestion is made, the researchers will revise it and enter it into the Google form.

A pilot test had already been performed, and the link had been forwarded to at least 30 pre-service teachers who would be among the participants in the pilot testing to assess the questionnaire's validity. The researchers interviewed them to ensure that the questionnaires were clear and accurate. If they have any suggestions or comments for improving the research questionnaire. The cronbach's alpha for the self-concept questionnaire is 0.74, while for the math attitude questionnaire is 0.86. Both questionnaires, for example, are reliable.

Table 1
Frequency Distribution of Respondents in terms of Sex and Age

Variable	f	%
Sex		
Male	62	31
Female	138	69
Age		
18 – 21	128	64.6
22 – 25	51	25.8
26 – 29	9	4.5
30 – 33	9	4.5
34 – 37	1	0.5

We have gotten a maximum participants using stratified sampling at exactly two-hundred (200) respondents within the Pre-service teachers of Zamboanga Peninsula Polytechnic state university (ZPPSU), upon visualizing the results it has produced higher responses from the female compared to male variable, additionally most likely to respond and connect to our survey is ranged between 18 to 21 years old amongst the Pre-service teachers of Zamboanga Peninsula Polytechnic state university (ZPPSU) as it is the average that gone through the traditional stage of schooling.

Table 2

Frequency Distribution of Respondents in terms of Year Level

Year Level	f	%
First	37	18.5
Second	71	35.5
Third	73	36.5
Fourth	19	9.5
	200	100.0

The frequency distribution amongst the year level of the Zamboanga Peninsula Polytechnic state university (ZPPSU). The responses mostly vary both on second year and third year level as it probably results equally. Thus it vary on 2nd and 3rd year level , because during our conducting process they are the most and fast that have responded in our survey questionnaire.

Table 3
Frequency Distribution of Respondents in terms of Course

Course	f	%
BEED	42	21.0
BTLED	19	9.5
BPED	60	30.0
BTVTED	34	17.0
BSED Math	45	22.5

The active responses that has responded according to courses provides higher frequency distribution on BPED sector, upon observing the BPED students are willing to comply in our survey due to we've enough connections and a higher trust as perceived.

CONCLUSIONS

As discussed in a chapter, mathematics attitudes are on the rise, with significance for pre-service teachers' math self-concept. Attitudes, skills, abilities, and interest in teaching mathematics are determined as a significant contribution. This study describes an approach of introducing the mathematical aspect into the relationship between self-concept and math attitudes. As a result, the students' attitude toward mathematics is a crucial component that influences their performance based on the statistics. In this study, a quantitative survey questionnaire was used. As a consequence of the analysis, there is no longer any difference between the levels of each data when determining the level of each data. The average result has positive seeking by comprising the respondents of pre-service teacher from collage of education.

In Conclusion, the data demonstrate a substantial relationship between Math self-concept and attitude toward mathematics among ZPPSU pre-service teachers. The findings also show a relationship between self-concept and attitude (Fennema and Shermaan, 1976; Vale and Leder, 2004; Bryant, 2015; Adown, 2016). Because pre-service teachers have a positive attitude toward mathematics and a positive self-concept, the variables are linked. This is important because having a positive self-concept and attitude toward a subject area like mathematics is linked to academic performance.

According to this study, there are some relationships between math self-concept and attitude toward mathematics. For all variables, the study's findings demonstrated a positive connection between students' academic achievement/performance and their attitude toward the subject. When one's attitude toward math improves, one's achievement will also improve.

RECOMMENDATIONS

Allow this research study to be publicized so that students and anyone with a negative attitude toward mathematics may learn about the relationship between self-concept and math attitudes. This research may aid students in overcoming their apprehension about attending math-related courses in college. For teachers intensify the use of motivational strategies to further promote positive self-concept and attitude towards mathematics and also ZPPSU, College of Teacher Education should use the opportunity to popularize mathematics education in linking its usefulness to life and this should be included in the strategies in teaching as what students view themselves and Teachers could relate and could adjust to their students, since it is concluded on our study that pre-service teacher possess a positive self-concept and attitude towards mathematics. And let this research study to be conducted at any fields in ZPPSU and other universities so that other researchers could relate their studies in correlation to our research.

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