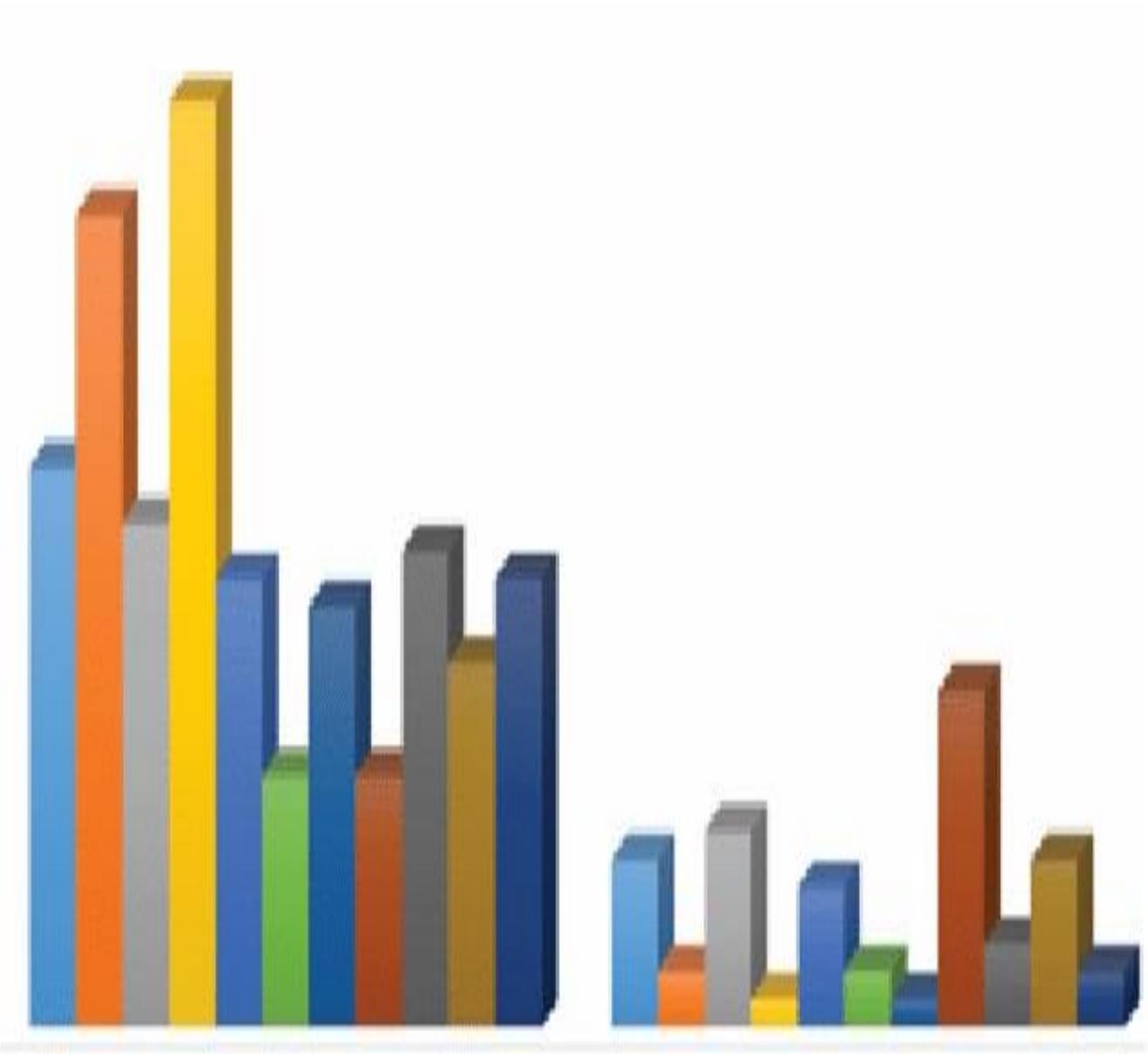


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Research Article

## Exploring Preservice Teachers' Attitude Towards Learning Mathematics: Basis for Curricular Enrichment

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### ABSTRACT

Mathematics has always been perceived as one of the most challenging subjects to study at the tertiary level. However, as future educators, a positive attitude towards mathematics is encouraged among preservice teachers because learning it would equip them with the basic knowledge and mental discipline in teaching math and other school subjects like Science, Music, Arts and technical subjects. Hence, this study sought to explore preservice teachers' attitudes towards learning Mathematics. There were two research questions and one hypothesis guided the study. This study utilized descriptive survey design and data were gathered online thru Google forms. A sample of 200 preservice teachers from a selected higher education institution in Zamboanga City was chosen randomly through proportionate and systematic sampling procedures. This study adapted the Attitude Towards Mathematics Inventory (ATMI) by Martha Tapia and George E. Marsh. The research instructor and subject matter experts validated this, and the subscales 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 preservice teachers had moderately positive attitudes towards learning Mathematics. Results also showed that there are significant positive correlations among the subscales. This study recommends that math teachers in higher education create learning activities that can alter or minimize negative attitudes towards Mathematics.

**Keywords:** math attitude, mathematics, pre-service teachers

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## INTRODUCTION

### Background of The Study

Mathematics has always been perceived as one of the most challenging subject to study in the tertiary level. However, as future educators, a positive attitude towards mathematics is encouraged among preservice teachers because learning it would equip them with the basic knowledge and mental discipline in teaching math and other school subjects like Science, Music, Arts and technical subjects. Hence, this study sought to explore preservice teachers' attitude towards learning Mathematics. There were 30 questions and with 1 hypotheses guided the study. This utilized descriptive survey design and data were gathered online thru Google forms. A sample of 200 preservice teachers from a selected higher education institution in Zamboanga City were randomly selected through proportionate and systematic sampling procedures. This study adapted one research instruments, namely (Tapia, M. and MARsh, G.E. (2002). These were validated by the research instructor and subject matter experts and both attained acceptable reliability coefficients during the pilot testing based on the computed Cronbach's alpha. These correlation coefficients were utilized in the analysis of the data. Findings revealed that the standard mean was 3.248 and a standard deviation of 0.4016 which signifies that the preservice students of Zamboanga Peninsula Polytechnic State University has a positive learning attitude towards mathematics. This study recommends that math teachers in the higher education must create learning activities that can alter or minimized negative attitude towards Mathematics.

### STATEMENT OF THE PROBLEM

This study aimed to determine what learning attitude towards learning mathematics does the preservice teacher of Zamboanga Peninsula State University students in have developed. Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of;
  - a. Sex;
  - b. Age;
  - c. Course; and
  - d. Year Level
2. What are the attitude of preservice teacher towards learning mathematics?
3. Is there a significant relationship in mathematics learning attitude in terms of;
  - a. Self-Confidence
  - b. Value
  - c. Enjoyment
  - d. Motivation

## SIGNIFICANCE OF THE STUDY

The findings of the study will benefit to:

**Dean.** This research study will serve as guide and basis to the programs that aims to minimize the case of negative attitude towards learning mathematics.

**Guidance Counselor.** This research study provides the information that can help to take an action for the existing of negative attitude towards learning mathematics.

**Teachers.** This research study will help the teachers to guide and how to manage negative attitude towards learning mathematics in the classroom.

**Students.** Towards learning mathematics in school as well as to society by having a positive attitude in decisions before judging the outcomes.

**Researchers.** This research study will help the researchers to understand more their research study towards attitude in learning mathematics subject.

## SCOPE AND LIMITATION

This study was conducted to a specific number of Zamboanga Peninsula Polytechnic State University

preservice teacher, specifically to those preservice teachers who has mathematics subject. This study focused on why there is liking and disliking attitude and its effect to the preservice teachers' performance in math. Lastly, this study focused to the possible his research study will help the students to minimize negative attitude solution on how to avoid or exterminate the students' negative attitude towards learning mathematics.

### Definition of Terms

**Attitude**- a settled way of thinking or feeling about someone or something, typically one that is reflected in a person's behavior. (Dictionary)

**Pre-service Teacher**- The pre-service teacher is defined as the student enrolled in a teacher preparation program who must successfully complete degree requirements including course work and field experience before being awarded a teaching license. (<https://www.igi-global.com/dictionary/a-safe-space/23201#:~:text=The%20pre%2Dservice%20teacher%20is,being%20awarded%20a%20teaching%20license.>)

**ZPPSU**- stand for Zamboanga Peninsula Polytechnic State University where the researchers are studying

**Self-confidence**- a feeling of trust in one's abilities, qualities, and judgment. (Dictionary)

Population: Pre-service teacher of CTE, ZPPSU

Courses in CTE	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	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

**Value**- the worth of something in terms of the amount of other things for which it can be exchanged or in terms of some medium of exchange. (Dictionary.com)

**Enjoyment**- the action of possessing and benefiting from something. (Dictionary)

**Motivation**- the feeling of wanting to do something, especially something that involves hard work and effort. (Oxford dictionary)

## METHODOLOGY

### Research Design

The research design used in conducting this study was quantitative research. The researcher used constructed survey method and the study participants were Zamboanga Peninsula Polytechnic State University preservice teachers.

### Participants of the study

The participants for this study were 200 preservice teacher of Zamboanga Peninsula Polytechnic State University.

### Population and Sample Procedure

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

### Research instrument

The research instruments used to conduct this research was an online form surveying containing series of questions related to the learning attitude towards mathematics to answers the research objective and paper and pen to analyze and summarize the gathered data.

Mathematics Learning Attitude Questionnaire. The Learning Attitude towards Mathematics Inventory (ALMI) which has five point Likert scale (1= Strongly Disagree; 5= Strongly Agree). It was consisted of 30 items questions with four subscales namely, Self – Confidence, Value, Enjoyment and Motivation.

There were 30 questions in total. The questionnaires will be validated by College of Teacher Education professors, including our Research 2 professor.

A pilot test had been performed, and the link had been forwarded to at least 50 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 mathematics learning attitude questionnaire is 0.86. The questionnaire for example is reliable.

**Research Problem 1.** What is the profile of the respondents in terms of;

- Sex;
- Age;
- Course; and
- Year Level

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

Variable	F	%
<b>Sex</b>		
Male	62	31
Female	138	69
<b>Total</b>	200	100
<b>Age</b>		
18-23	167	83.5
24-29	23	11.5
30-35	7	3.5
36-41	3	1.5
<b>Total</b>	200	100

Base in the table 1, the frequency distribution of respondents in terms of sex and age. The highest frequency from two variables in terms of Sex are female that have 138 respondents equivalent of 69% and age of 18-23 and lowest frequency respondents are male and age of 36-41. The percent target of 100% female has 69% and 31% of the male. In that frequency distribution the female is greater than the male respondents also the age 18 above is greater than age of 36 to 41.

Table 2: Frequency Distribution of Respondents in terms of year level

Year Level	F	%
First Year	37	18.5
Second Year	71	35.5
Third Year	73	36.5
Fourth Year	19	9.5
<b>Total</b>	200	100

In this table 2, the frequency distribution of respondents in terms of year level. The highest frequency respondents are third year, second year and lowest frequency respondents is fourth year and first year then the total respondents are 200. In that frequency distribution of 100% the third year is greater than 1% than second year because third year

has 36.5% and second year has 35.5%. And also the lowest frequency distribution is fourth year has 9.5% and the first year has 18.5%. I there to included that third year responded are more than second year, first year and fourth year.

Table 3: Frequency Distribution of Respondents in terms of Course

Courses in CTE	F	%
BPED/BSED MAPEH	62	31
BTLED/BSED TLE	19	9.5
BSED-Math	45	22.5
BEED	42	21
BTVTED/BTTE	32	16
TOTAL	200	100

Table 3 shows the frequency distribution of respondents in terms of course. The highest respondents in terms of course are BPED /BSED MAPEH which has 31% and lowest frequency distribution is in BTLED /BED TLE which has a 9.5%.

#### Research Procedure

1. Constructing Research Online Research Questioner
2. Identifying Research Respondent Trough Random Sampling
3. Data Gathering
4. Data Analysis

#### 5. Identifying Conclusion

##### Data Analysis

The data in this study will be collected in a form of survey. The researcher will provide questions and conduct an online survey to the participants to gather the data from the participants' response to the survey.

##### Ethical consideration

This study will be conducted with the freewill of the participants to participate and has the right to decline if they can sense any harm that could be used against them. The researcher will also guarantee that the information that will be shared by the participants will not leak and cause harm to them.

## RESULTS AND DISCUSSION

This section deals with the presentation of results and discussion of the data gathering based on the respondents' profile, research problem and hypotheses posited for this study. The presentation of data is in order, arranged according to the statement of the problem.

**Research Problem 2.** What are the attitude of preservice teacher towards learning attitude in mathematics?

Table 1: Self Confidence

	(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

Table 3: Enjoyment

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

Table 4: Motivation

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 1.5: 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 sub-scales have 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 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 in mathematics learning attitude in terms of;

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

Table 3.1 Enjoyment and Motivation

Pearson - r Coefficient	Coefficient of Determination	Interpretation
0.05 <sup>s</sup>	0.10	Low Positive Correlation

Legend: <sup>s</sup> Significant at alpha = .05 level.

The table above indicates that there is a low significant positive correlation between mathematics enjoyment and motivation of the college students in the control group, with a correlation coefficient of .05. It also indicates that .10% of the variance in the mathematics self-confidence is attributed to the

enjoyment of the college students; leaving .10% of the variance in the mathematics enjoyment is attributed to other factors or due to sampling error. This implies that mathematics enjoyment has a huge effect on the motivation of the pre-service teachers.

Table 3.2 Self-Confidence and Enjoyment

Pearson - r Coefficient	Coefficient of Determination	Interpretation
0.73 <sup>s</sup>	1.46	Very High Positive Correlation

Legend: <sup>s</sup> Significant at  $\alpha = .05$  level.

The table above indicates that there is a very high significant positive correlation between mathematics self-confidence and enjoyment of the college students in the control group, with a correlation coefficient of .73. It also indicates that 1.46% of the variance in the mathematics self-confidence is attributed to the

enjoyment of the college students; leaving -1.46% of the variance in the mathematics self-confidence is attributed to other factors or due to sampling error. This implies that mathematics self-confidence has a small effect on the enjoyment of the pre-service teachers.

Table 3.3 Value and Motivation

Pearson - r Coefficient	Coefficient of Determination	Interpretation
-0.15 <sup>s</sup>	-0.3	Low Negative Correlation

Legend: <sup>s</sup> Significant at  $\alpha = .05$  level.

The table above indicates that there is a low significant negative correlation between mathematics value and motivation of the college students in the control group, with a correlation coefficient of -0.15. It also indicates that -.30% of the variance in the mathematics self-confidence is attributed to the

enjoyment of the college students; leaving -.30% of the variance in the mathematics value is attributed to other factors or due to sampling error. This implies that the value of mathematics has a small effect on the motivation of the pre-service teachers.

Table 3.4 Self-Confidence and Motivation

Pearson - r Coefficient	Coefficient of Determination	Interpretation
-0.13 <sup>s</sup>	-0.26	Negligible Correlation

Legend: <sup>s</sup> Significant at  $\alpha = .05$  level.

The table above indicates that there is a negligible correlation between mathematics self-confidence and motivation of the college students in the control group, with a correlation coefficient of -.13. It also indicates that -.26% of the variance in the mathematics self-confidence is attributed to the

enjoyment of the college students; leaving -.26% of the variance in the mathematics self-confidence is attributed to other factors or due to sampling error. This implies that mathematics self-confidence has a small effect on the motivation of the pre-service teachers.

Table 3.5 Self-Confidence and Value

Pearson - r Coefficient	Coefficient of Determination	Interpretation
0.53 <sup>s</sup>	1.06	Very High Positive Correlation

Legend: <sup>s</sup> Significant at  $\alpha = .05$  level.

The table above indicates that there is a very high significant positive correlation between mathematics self-confidence and value of the college students in the control group, with a correlation coefficient of .53. It also indicates that 1.06% of the variance in the mathematics self-confidence is attributed to the enjoyment of the college students; leaving -1.06% of

the variance in the mathematics self-confidence is attributed to other factors or due to sampling error. This implies that mathematics self-confidence has a minimum effect on the value of mathematics to the pre-service teachers.

Table 3.6 Value and Enjoyment

Pearson - r Coefficient	Coefficient of Determination	Interpretation
0.50 <sup>s</sup>	1.0	High Positive Correlation

Legend: <sup>s</sup> Significant at  $\alpha = .05$  level.

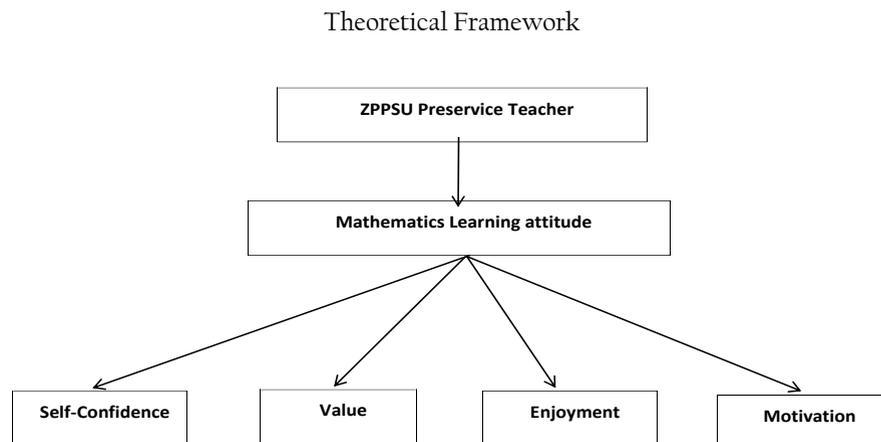
The table above indicates that there is a high significant positive correlation between mathematics value and enjoyment of the college students in the control group, with a correlation coefficient of .50. It also indicates that 1.0% of the variance in the mathematics self-confidence is attributed to the enjoyment of the college students; leaving -1.0% of the variance in the mathematics value is attributed to other factors or due to sampling error. This implies that mathematics value has a small effect on the enjoyment of the pre-service teachers.

## THEORETICAL FRAMEWORK

Attitude theories have a wide range of dimensions, variables, processes, and impacts, and numerous models have been constructed based on this. As a result, the theoretical framework for this study was Shavelson's (1976) model of Learning attitude. According to the paradigm, an individual's attitude is

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. A school child's good attitude must be developed in order to achieve academic success. 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).



This final section presents the Restatement of the Problem, Summary of Findings, Conclusions and Recommendations for further studies.

#### Restatement of the study

This study aimed to determine what learning attitude towards learning mathematics does the preservice teacher of Zamboanga Peninsula State University students in have developed.

The researcher used quantitative research in conducting the study, the researcher used constructed survey method and the study participants were Zamboanga Peninsula Polytechnic State University preservice teachers. It sought to determine:

1. The attitude of preservice teacher towards learning attitude mathematics
2. The attitude of pre-service teacher towards learning mathematics in terms of;
  - a. Self-Confidence
  - b. Value
  - c. Enjoyment
  - d. Motivation

## SUMMARY OF FINDINGS

Table 1 indicates the total mean of the preservice teachers' Self-confidence towards learning mathematics. It shows that the total mean obtained from the survey is 3.1324 which means that preservice teacher is in mediocre level when it comes to having self-confidence towards learning mathematics.

Table 2 indicates the total mean of how preservice teachers apply the value of learning mathematics in their real life. It shows that the total mean obtained from the survey is 3.2048 which means that preservice teacher positively applies the value of learning mathematics in their real life.

Table 3 indicates the preservice teacher's learning enjoyment in taking mathematics classes. It shows that the total mean obtained from the survey is 3.1092 which means that preservice teacher has the effective learning mindsets in taking mathematics classes.

Table 4 indicates the preservice teacher's learning motivation in mathematics classes. It shows that the total mean obtained from the survey is 3.5457 which means that preservice teacher has the effective learning mindsets in taking mathematics classes.

The Pearson – r correlation result found out that the self-confidence, value, enjoyment has a positive effect

to the learning attitude of the preservice teachers towards mathematics.

mathematics and find solution to address these problems.

## CONCLUSIONS

The overall result on the survey about Learning Attitude Towards mathematics of the preservice teachers was obtained after solving the gathered data. The overall mean is 3.248 and the overall standard deviation is 0.4016 which only means that the preservice teachers have the positive and productive learning attitudes toward mathematics in correlation to their self-confidence, value, motivation, and enjoyment. The overall result of the gathered data rejects the null hypothesis of this study which is the observation of the researchers that the preservice teachers have negative attitude towards learning mathematics in Zamboanga Peninsula Polytechnic State University.

## RECOMMENDATIONS

- The researchers recommend to conduct a further investigation with a wider scope and greater participants to improve this study.
- Gather information about teaching strategies that will be used by preservice teacher to make an effective learning process in mathematics.
- Seek reasons and factors why preservice teachers tend to dislike learning

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## Research Article

# Exploring Pre-service Teachers' Academic Emotion in an Online Mathematics Class: Basis for Curricular Enhancement for the New Normal in Education

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## ABSTRACT

The online classroom environments promote several emotions, just like the traditional classroom setting. Students may feel anxious taking online exams, while others may feel more comfortable participating in online learning because they have the technological resources to meet online works. For future educators, positive academic emotions must be fostered among preservice teachers in an online Mathematics class because learning Mathematics will equip the basic knowledge and mental discipline in teaching their field of specialization, other than Mathematics, such as, Music, Social Sciences, Sciences and technical subjects. Thus, this study explored the academic emotions experienced by the preservice teachers in their online Mathematics classes. Two research questions guided the study. This utilized descriptive survey design, and data were obtained online thru Google Forms. A sample of 141 preservice teachers from a selected higher education institution in Zamboanga City was randomly selected through proportionate and systematic sampling procedures. This study adapted Achievement Emotion Questionnaire by Pekrun et al. (2006). 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, Pearson - r correlation were utilized in the analysis of the data. Findings revealed that preservice teachers experienced moderate anxiety, enjoyment, and pride in their online Mathematics class. Results also showed significant positive relationships among positive emotions and significant positive relationships among negative emotions. However, there were significant negative relationships between positive and negative emotions. This study recommends that math teachers at the tertiary level create an online learning environment that fosters positive academic emotions and minimizes negative ones.

**Keywords:** academic emotions, mathematics, pre-service teachers, online class

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## BACKGROUND OF THE STUDY

Emotion is a natural instinctive state of mind deriving from one circumstance, mood, or relationship with others. Students' emotions towards learning are essential to the learners, levels their emotions, happy, motivated, confused, sad, hopeless, and frustrated during their mathematics online class.

Academic emotions are learner emotions that occur in the context of classroom teaching and accomplishment (Pekrun et al. 2002). Achievement emotions are described as feelings connected to achievement that may be assessed using the achievement emotions questionnaire (Pekrun et al. 2011). This survey includes scales for nine different emotions: pleasure, boredom, anger, hope, anxiety, hopelessness, pride, relief, and shame. According to their object focus, or the center of attention when emotion is formed, these nine emotions may be classified into two types: (1) activity emotions, which are concerned with ongoing achievement-related actions, and (2) outcome emotions, which are concerned with the results of these activities. Activity emotions include pleasure, boredom, and rage. Prospective result feelings like hope, fear, and hopelessness, as well as retrospective outcome emotions like pride, relief, and humiliation, are among the outcome emotions. The control-value theory suggested by Pekrun is used to explain academic emotions (2006). Emotions, according to this idea, are collections of interconnected psychological processes that include emotional, cognitive, motivational, and physiological components (Pekrun et al. 2011). Subjective control and value are evaluated in this philosophy.

### Academic Emotion and Online Learning

Online learning gives the education to reach many students without requiring learners and professors to be in the same environment. Therefore, it allows individuals to attend the courses even in illness, bodily restraint, and catastrophe states. Online learning has become a requirement in the COVID-19

pandemic, as well (Dhawan, 2020). Online education has adopted the learners' flexibility in coping, resounding on, and accomplishing their objectives. However, an individual should have both the required information/skills and emotional possessions such as attitude and enthusiasm to have online learning in the most effective way (Yurdugul & Demir, 2017).

## STATEMENT OF THE PROBLEM

This study aims to determine the academic emotions of the pre-service teachers of the College of Teacher Education in Zamboanga Peninsula Polytechnic University in mathematics online class during the second semester of the school year 2020-2021. Specifically, the study seeks to answer the following questions.

General Statement: Is there a significant relationship between the academic emotions in mathematics online classes of the pre-service teachers?

STATEMENT 1: To what extent do the following academic emotions experience by pre-service teachers during the mathematics online class?

- a) Hopelessness
- b) Boredom
- c) Anger
- d) Anxiety
- e) Enjoyment
- f) Pride

## SIGNIFICANCE OF THE STUDY

This study is significant to the following:

### Student

Let students know the advantage or disadvantages of conducting mathematics online classes among pre-service teachers during this time in our present situation.

### Parents

The parents must give strong support to their children's studies. Let them clarify the situations that

happen to us in this pandemic so that they would not just let their emotions be the ones to rule over them.

### Teachers

The teachers need to know their students' academic skills and understand every one of their students' knowledge/capabilities in doing the mathematics online class among pre-service teachers.

### Future Researcher

They are to choose some details here regarding the academic emotion experience in mathematics online class. It can give them guidance or some stuff that they can relate to.

## SCOPE AND DELIMITATION

This research focuses on determining the academic emotions experience in mathematics online class among pre-service teachers of Zamboanga Peninsula Polytechnic State University of the school year 2020-2021. The respondents are students of the College of Teacher Education Department who has a mathematics online class for the second semester.

## REVIEW OF RELATED LITERATURE AND STUDIES

This section contained a review of related literature which consists of different authors with different outcomes of their research studies about the Academic Emotion experience in mathematics online class among pre-service teachers. On the other hand, the research study of each author launched in different years.

### Related Literature

General wisdom has it that emotion is antithetical to thinking; the coolest head prevails (Barbalet, 2002). This may be the reason that, until recently, emotion and learning have received little attention in the development of education and instructional models. We may have Bloom and colleagues to thank for introducing us to the notion of affect as a learning

domain (Krathwohl, 2002; Morrison, Ross, & Kemp, 2004).

In recent years, there has been a growing interest in the role of emotions in academic settings, especially in how emotions shape student engagement and learning" (Linnenbrink-Garcia & Pekrun, 2011, p. 1). Educational psychology has long considered motivation, particularly achievement motivation concerning education performance, to be related to emotion (Weiner, 1985; Artino, 2009; Artino & Stephens, 2006). Callahan (2004) called for educators who espouse critical theory to "manage the emotions in their classrooms actively" (p. 82). He pointed out that "the very praxis of critical theory relies on emotion as its catalyst" (p. 75). Dirkx (personal communication, 2005) questioned the appropriateness of "management" of emotion in learning environments. However, the impact on particular emotional states in relation to the learning environment is still to be understood.

The underlying issue of emotions connected to mathematics performance has been researched thoroughly through lenses of resilience, anxiety, sense of belonging, motivation, and perception of mathematical ability (Clarke, et al., 2014; Hochanadel & Finamore, 2015; Kulkin, 2016). Overall, emotions are defined through multiple levels of the taxonomy of the affective domain written by Krathwohl, Bloom, and Masia (1973). Learners respond to their emotions through varying levels of effectiveness. In the lowest level, known as receiving, students are aware of their emotions, beliefs, and attitudes. An example of this would be that students are aware that they have a negative attitude towards mathematics. In the second level, responding, students demonstrate a change in emotion, such as expressing a more positive affect in mathematics. In the second level, the students would express a change in emotions, beliefs, and attitudes for a short time like a class period or over the course of a few weeks. In the third level of the affective domain, valuing, students show a commitment by

demonstrating a continued focus on the changing emotions, beliefs, and attitudes than what would be considered responding. This could be seen as a student having a more positive outlook in mathematics throughout an entire semester or school year compared to only during a few lessons in the responding level of effect. In the fourth level of the affective domain, organization, the student transitions the emotion, belief, or attitude into a priority or goal. In this fourth level, the effect has become part of who the student is as a person. This level reflects that the student has adopted the emotion, belief, or attitude as part of their "life philosophy."

Frenzel and Goetz (2007) describe three reasons why understanding emotions connected to learning and achievement are important. The first reason is that emotions are crucial to well-being and psychological health. The second is the significant impact emotions play in student learning and achievement. Third, cognitive competencies predict academic ability, but emotional variables predict course enrollment and career pursuits. In this, emotions play a large role in what we as humans -and specifically young adults do and how we do it. In our personal experiences, we can all find times when we chose to do things, we enjoy over things we did not enjoy as much, even if we were good at the task. For example, think of the emotions brought forth when thinking of timed times table quizzes from math. You may be skilled at the times tables, but the thought of having to complete the task and the emotions tied to the task may result in avoidance of the task.

**A key emotion considered a time and again in mathematics education is anxiety.**

Ruff and Boes (2014) indicate that causes of mathematics anxiety include social, cognitive, and academic factors, which are related to mathematics avoidance. Social factors include societal stereotypes of race and gender, as well as parental expectations. Specifically, the negative social factor that has a large

effect is the stereotype that suggests girls are not as good at mathematics as boys (Frenzel, et al., 2007; Spencer, Steele, & Quinn, 1999). Another significant social factor is the parents' beliefs and feelings about mathematics (Ruff & Boes, 2014). For example, if a parent believes in the value of mathematics, then this importance is imprinted on their children. In the opposite effect, if parents have negative beliefs and emotions connected to their mathematical experience, then those may be imprinted on their children.

Cognitive factors that impact mathematics anxiety are related to learning disabilities and stress, as well as a level of working memory (Ruff & Boes, 2014). In general, performing mathematics tasks requires higher working memory (Raghubar, Barnes, & Hecht, 2010). Working memory and cognitive factors can be thought of as a desk working space; more open clear space allows for more working room, whereas a small and/or disorganized desk reduces the working space. In considering cognitive factors in this way, it is easier to visualize how more complex tasks like mathematics, which need ample workspace, would cause stress if the desk space was small and/or disorganized. We can also visualize the students on the opposite side of the spectrum who have a more organized and open space to work and how they would be able to accomplish the same task with less stress, anxiety, and other negative emotions. Finally, academic factors include ineffective teaching styles, teachers who are uncomfortable with mathematics, and traditional mathematics curriculum and practices (Ruff & Boes, 2014).

These factors all bring about emotions that can negatively impact a student's desire to complete tasks, specifically mathematics-related, and include hopelessness, shame, and anxiety (Frenzel et al., 2007). Overall, the research directs educators to openly address emotions related to mathematics anxiety and help students work through them (Kulkin, 2016; Ruff & Boes, 2014). This means

teachers should discuss how emotions affect the way students perceive and act regarding tasks and teach students how to work through emotions.

Along with these factors, helping students understand that intelligence is not fixed and can be changed encourages students to persevere and work through emotions. Yeager and Dweck (2012) have shown that students who perceive intelligence as fixed or unchanging lose motivation to learn once tasks become difficult because they feel they have reached the precipice of their natural ability to complete the task and cannot go any further. However, if the students believe that intelligence can change (have a growth mindset), they would persist until they could master the task (Yeager & Dweck, 2012). The concept of fixed intelligence brings in related anxieties and stress as the students reach the point in their learning where they find themselves challenged and are unable to cope with and appropriately address these emotions (Hochanadel & Finamore, 2015; Yeager & Dweck, 2012).

### Related Studies

In past research, studies on achievement emotions typically focused on emotions relating to achievement outcomes (e.g., research on test anxiety, Zeidner, 2007; studies on emotions following success and failure, Weiner, 1985). The perspective used here implies that emotions about achievement-related activities are also considered to be achievement emotions. Examples of outcome-related achievement emotions are the joy and pride experienced by students when academic goals are met, and the frustration and shame when efforts fail. The excitement arising from learning, boredom experienced in classroom instruction, or anger about task demands are but a few examples of activity-related emotions. Activity emotions have traditionally been neglected by research on achievement emotions. The present perspective implies that the scope of existing research should be broadened to include this important class of emotions as well.

The aim of the research study reported in this article was to investigate how adult learners talk about their emotions in the context of a year-long online course, the first online course these adults take, as part of a distance education program. The theoretical and methodological approach focused on formulating an account of how emotion discourses are used by learners, what role they play in online learning, and how they change over one year (if they do so). The findings of this study provide three insights: (1) they show how adult learners (who also happen to be novice online learners) respond emotionally and talk about their emotions in relation to online learning; (2) they call attention to how emotion talk changes from the beginning of the course to the end, always in response to specific demands and dimensions of online learning; and (3) they reveal the differential emotional responses between men and women in relation to their social and gender roles and responsibilities. The empirical and policy implications of this study are discussed at the end.

Cleveland-Innes, M., & Campbell, P. (2012). Emotional presence, learning, and the online learning environment. In spite of evidence that more and more students are engaging in online learning experiences, details about the transition for teachers and students to a new learning environment are still unconfirmed. While new technologies are often expected to make work easier, they also involve the development of new competencies. This change may, in itself, elicit an emotional response, and, more importantly, emotion may impact the experience of online learning. Knowledge about the impact of emotion on learning broadly is available, but not about emotion and online learning. This study presents evidence of emotions present in online environments, and empirical data which suggests emotional presence may exist as a fundamental element in an online community of inquiry.

Marbán, J.M., Palacios, A. & Maroto, A. Enjoyment of teaching mathematics among pre-service teachers.

Teacher training is a key element of any quality education system. In the field of mathematics education, identifying the factors that determine positive attitudes towards the teaching of this discipline in the context of initial teacher training is an inherent challenge. This work approaches the issue from a multivariate point of view through a model based on structural equations, in which beliefs, emotions, and attitudes towards mathematics are intertwined in explaining their enjoyment of teaching. The results show us that anxiety is a factor with a significant influence over the other components of the mathematical affective domain and that it is through this influence that it acts on the enjoyment of teaching mathematics.

## THEORETICAL FRAMEWORK

In the control-value theory, achievement emotions are defined as emotions tied directly to achievement activities or achievement outcomes. Achievement can be defined simply as the quality of activities or their outcomes as evaluated by some standard of excellence (Heckhausen, 1991). By implication, most emotions pertaining to students' academic learning and achievement are seen as achievement emotions, since they relate to behaviors and outcomes that are typically judged according to standards of quality-by students themselves and by others. However, not all of the emotions in educational settings are achievement emotions. Specifically, social emotions are frequently experienced in these same settings, as for example, a student's caring for a friend in the classroom. Achievement and social emotions can overlap, as in emotions directed towards the achievement of others contempt, envy, empathy, or admiration instigated by the success or failure of others; see Weiner, 2007).

### Academic Emotion and Online Learning

Daniels and Stupnisky (2012) argued that emotion research in online learning has made it "more important than ever to consider the source of the emotion in addition to the emotion itself," asserting

that students are likely to "experience emotions in response to the technology itself." Accordingly, Regan et al. (2012) suggested that the factors affecting emotions in technology-enriched learning environments are different from those that influence emotions in traditional, on-campus environments. Therefore, domain-specificity, as well as technology acceptance and use are both important determinants for analyzing achievement emotions of university students in an online learning environment.

Numerous studies describe how technology is used in different domains. For example, Schmid et al. (2017) showed that teacher students in Germany are in comparison to students of other disciplines the most skeptical one is when it comes to the use of digital media. Moreover, teacher students are less motivated than other students to use digital media.

Research on technology acceptance tries to find factors that explain user attitudes, behavioral intention, and ultimate usage behavior. Davis (1985) postulated the expected benefits (value) and the expected user-friendliness (control) as important predictors of user acceptance in technology-enriched learning environments. Technology acceptance is not only reflected regarding the frequency of using technology but rather affective experience is closely linked to the concept of acceptance: "Acceptance includes a relatively permanent cognitive and affective perceptual component, coupled with a positive willingness to react to an e-learning system (attitude level), as well as a behavioral component that implies an actual use of the system (behavioral level)" (Olbrecht, 2010; translated from German).

The technology acceptance model (TAM) developed by Davis (1985) and Venkatesh and Davis (2000) theorizes that perceived usefulness influences attitudes and beliefs toward technology usage, and it is an important determinant of individuals' intentions to use the technology. Furthermore, Venkatesh (2000) argued that in addition to perceived usefulness

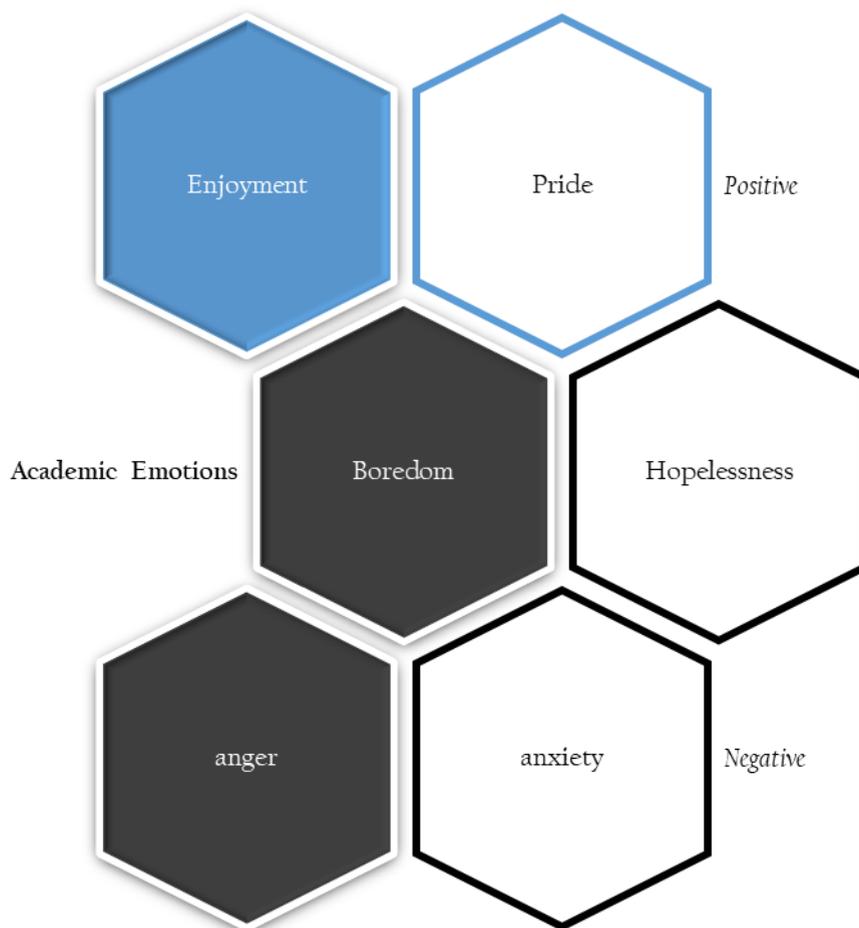
the perceived ease of use is an important determinant for attitudes toward technology. Perceived control, intrinsic motivation (playfulness), and emotion (anxiety) have been tested as influencing users' perceptions about technology's ease of use. The empirical results indicated that up to 60% of the variability of perceived ease of use as explained in this model (Venkatesh, 2000).

According to TAM, a student's intention to use an online learning system is determined by one's beliefs and attitude toward using the online system and the perceived usefulness of the system. Consequently, when the online learning system is perceived as easy to be used, the higher will be the student's perceived ability to use this online system successfully, and hence the student will experience more positive emotions and perform better in an online course (Venkatesh and Bala, 2008). Individual variables, such as self-efficacy, intrinsic motivation, cognitive absorption (Saadé and Bahli, 2005), and computer anxiety were all confirmed as determinants of the perceived ease of use (Gefen and Straub, 1997; Chang and Cheung, 2001; Gefen et al., 2003). External variables, such as characteristics of the learning environment affect the perceived usefulness directly or indirectly through the perceived ease of use (Compeau et al., 1999).

For example, Wong (2015) showed that teachers in Hong Kong have a positive attitude toward technology, with perceived usefulness having a greater impact on behavioral intention than perceived usability. In Germany, the TAM was used to evaluate the acceptance of the learning management system of the University of Oldenburg by students, lecturers, and administrators (Hamborg et al., 2014). It has to be considered that technology-based learning environments may hinder the learning process if the technology is perceived by students as being too complex and not useful to enhance their performance. Saadé and Kira (2006) showed in a study based on a structured equation modeling simulation that the influence of emotions (anxiety and pleasure) on perceived usefulness is indirectly moderated through the perceived ease of use.

Further studies focused on information systems and investigated the TAM constructs concerning affect and anxiety (Agarwal and Karahanna, 2000; Venkatesh and Davis, 2000; Saadé and Kira, 2009). However, research is missing that applied TAM not only to anxiety and affect but also to different positive and negative achievement emotions, and an online learning environment in teacher education.

## CONCEPTUAL FRAMEWORK



\*Legend: (blue: positive emotion; black: negative emotion; Filled shape: Activity Focus; Not filled: Outcome focus)

Fig. 1: An overview of the study

## RESEARCH METHODOLOGY

This section the methodology employed in the research. This includes the research design, population and sample, research instrument, and data gathering.

### Research Design

A Quantitative research design with cross-sectional surveys. Cross-sectional surveys are a type of

observational research that analyzes data of variables collected at one given point in time across a sample

population or pre-defined subset. The goal of these studies is to investigate the current situation; they do not seek to investigate change and the factors that cause the change.

A cross-sectional study involves looking at data from a population at one specific point in time. The participants in this type of study are selected based on particular variables of interest. Cross-sectional studies are observational in nature and are known as descriptive research not casual or relational, meaning that you can't use them to determine the cause of something, such as a disease. Cross-sectional studies, unlike other forms of retrospective studies, do not

monitor individuals over time. {Wang & Cheng 2020}. It will be conducted through a google form due to the schools' health protocols due to the Covid-19 Pandemic. It will be collected through the internet because we can't follow the standard procedure due to our situation.

### Population and Sampling Procedure

The target respondents of this research study are the pre-service teacher of the College of Teacher Education (CTE) who is officially enrolled in mathematics online class during the second semester, the school year 2020-2021 of Zamboanga Peninsula Polytechnic State University (ZPPSU).

Table 1. Course and Year Level with mathematics online class for 2nd semester.

<i>COURSES IN CTE</i>	<i>1<sup>ST</sup> YEAR</i>	<i>2<sup>ND</sup> YEAR</i>	<i>3<sup>RD</sup> YEAR</i>	<i>TOTAL</i>	
<i>BEED</i>	36	87	60	183	
<i>BSED MATH</i>	41	41	34	116	
<i>BTLED HE</i>	0	32	0	32	
<i>BTLED IA</i>	0	22	0	22	
<i>BTLED ICT</i>	0	15	0	15	
<i>BTVTED</i>	10	14	0	24	
<i>AUTOMOTIVE</i>					
<i>BTVTED CIVIL TECHNOLOGY</i>	11	0	0	11	
<i>BTVTED FSM</i>	0	29	0	0	29
<i>BTVTED GARMENTS</i>	0	19	0	0	19

Table 2: Stratified Sampling/Systematic Sampling

<i>Course</i>	<i>N</i>	<i>%</i>	<i>N</i>
BEED	183	40.58	57
BSED- MATH	116	25.72	36
BTLED	69	15.13	22
BTVTED	83	18.40	26
TOTAL	451	100	141

### Research Instrument

Based on a Likert scale (1= Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree),

students indicated the extent to which they experience academic emotion measured with Pekrun

et al.'s (2005) Achievement Emotion Questionnaire (AEQ), and the researchers adopted the tools. The questionnaire is divided into two sections: a class version and a test version. The class version was chosen for the study. A 24 items questionnaire broke up into six (6) academic emotions, each with four questions.

The adopted questionnaire was subjected to a validation process for content validity using Cronbach's alpha: Hopelessness has a Cronbach's alpha of 0.87; Boredom has a Cronbach's alpha of 0.78; Anger has a Cronbach's alpha of 0.80; Anxiety has a Cronbach's alpha of 0.85; Enjoyment has a Cronbach's alpha of 0.85; and Pride has a Cronbach's alpha of 0.73, indicating that the questionnaire is valid.

Following the validation of the questionnaire, a pilot test was conducted on the instrument with 30 students from various courses at Zamboanga Peninsula Polytechnic State University, who are not the target respondents for the real study. This was done to see how the subject will react to the questionnaire; whether the items are clear and easy to understand; whether more items are needed in certain areas; or whether there are any items to which they would prefer not to respond; and to determine the feasibility of the proposed data analysis method for the study.

### Data Gathering

The researchers approached the Dean for permission to conduct the study, and because of the pandemic and quarantine regulations, the researcher utilized messenger to contact the chairman of the Zamboanga Peninsula Polytechnic State University's College of Teacher Education program for a list of responders. Google Forms, a survey administration software, was used to collect data for the study.

### Statistical Tools

Mean – is the average or the most common value in a collection of numbers. It is a measure of central

tendency of a probability distribution along median and mode.

Standard Deviation – is a statistic that measures the dispersion of data set relative to its mean.

Pearson-r correlation coefficient - is a measure of linear correlation between two sets of data. It is the ratio between the covariance of two variables and the product of their standard deviations; thus, it is essentially a normalized measurement of the covariance, such that the result always has a value between -1 and 1.

## RESULTS AND DISCUSSION

This section will bring in the presentation of the findings and analysis derived from the online survey. A total of 141 respondents were received from the target group of pre-service teachers who had an online math class this second semester of the school year 2020-2021. Tables have been used to facilitate simplistic reading-friendly writing. Finally, the summary of this chapter is provided.

**Research Problem 1.** To what extent do the following academic emotions experience by pre-service teachers during the online math class?

Table 4.1: Level of Academic Emotions

<i>Academic Emotions</i>	<i>Mean</i>	<i>SD</i>
<i>Boredom</i>	2.67	0.56
<i>Hopelessness</i>	2.53	0.63
<i>Anger</i>	2.35	0.61
<i>Anxiety</i>	3.35	0.62
<i>Enjoyment</i>	3.37	0.50
<i>Pride</i>	3.59	0.51

The table above indicates that the level of academic emotion experienced by pre-service teachers during the online math class relative to; boredom, hopelessness, anger, anxiety, enjoyment, and pride. Under mean the higher weighted mean down to

lowest are pride (3.59), enjoyment (3.37), anxiety (3.35), boredom (2.67), hopelessness (2.53), and anger (2.35). under standard deviation, the higher weighted standard deviation down to the lowest are; hopelessness (0.63), anxiety (0.62), anger (0.61), boredom (0.56), pride (0.51), and enjoyment (0.50).

Based on the finding, the majority of the pre-service teachers experience more positive emotion than negative emotions in mathematics online classes, specifically pre-service teachers enjoy and is proud in their achievement in mathematics online classes. The table also shows that despite the enjoyment, pre-

service teachers experience anxiety in mathematics online classes. According to the control-value theory, partial control on activity will instigate anxiety if the focus is on failure. And among six (6) emotions anger is the least felt emotion.

**Research Problem 2.** Is there a significant relationship between the academic emotions of the pre-service teachers?

The table below demonstrates how to interpret the size (strength) of a correlation coefficient. (Parvez Ahammad)

Table 4.2: Pearson-r Correlation Coefficient and Coefficient of Determination of each

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.67	0.445	Moderate positive Correlation

*Boredom/Hopelessness (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The table above indicates that there is a moderate significant positive correlation between boredom and hopelessness with a correlation coefficient of 0.67. It also indicates that 44.5% of the variance in the boredom to the hopelessness in the pre-service teacher. Pre-service teachers who are bored in mathematics online class are likely to instigate hopelessness. According to the control-value theory, boredom is created when the activity is neither highly nor negatively regarded. If expectations are too low, such as in repetitive regular tasks, there may be

inadequate challenge and intrinsic value, resulting in boredom. If demands exceed capabilities and cannot be satisfied, it may be difficult to discern meaning from the activity, lowering its value. Furthermore, subjectively discounting tough content may aid in coping with the threat posed by high demands. Boredom may be experienced under both low and high demand situations, implying that it is a result of a lack of value. And no attainability of success will induce hopelessness.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.61	0.375	Moderate positive Correlation

*Boredom/anger (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The table above indicates that there is a moderate significant positive correlation between boredom and anger with a correlation coefficient of (0.61). It also indicates a 37.5% variance in the boredom to the anger of the pre-service teacher in ZPPSU. Pre-service teachers who feel bored in mathematics online class

instigate anger. Boredom is caused by the repetition and lack of interest in the details of our task. Also, a difficulty in discerning the activity can be boring and can be irritating. According to Pekrun, if there is controllability, but the activity is negatively valued, anger is posited to be experienced. Examples are

activities that can be performed, but are subjectively aversive because they require much mental or physical effort).

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.43	0.186	Low positive correlation

*Boredom/anxiety (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The table above shows a low relationship between boredom and anxiety of the pre-service teacher in the control group, with a correlation coefficient of 0.43. It

also indicates that 18.6% of the variance in the boredom is attributed to the anxiety of the pre-service teacher in ZPPSU.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.48	0.234	Low negative Correlation

*Boredom/enjoyment (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a low negative relationship between boredom and enjoyment with a correlation coefficient of -0.48 with 23.4% of the variance. Thus, students who enjoyed the online math class did not feel bored. A study by Schukajlow showed a negative

relation between the two emotions: The correlation between enjoyment and boredom was moderate and negative (-.51).

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.30	0.087	Low negative correlation

*Boredom/pride (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a weak negative relationship between boredom and pride with a correlation coefficient of -0.30 and 8.7% of the variance in the boredom to pride in the pre-service teacher in ZPPSU.

Pre-service teachers who feel bored are not likely be proud that they have no interest in mathematics online class.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.77	0.592	High Positive Correlation

*Hopelessness/Anger (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a high positive relationship between hopelessness and anger with a correlation coefficient of 0.77 with 59.2% of the variance in the hopelessness to anger in the pre-service teacher in ZPPSU. Pre-service teacher who is hopeless in their mathematics online class instigate anger.

Hopelessness is posited to occur whenever a positive achievement outcome cannot be attained or a negative outcome is subjectively certain. As such, hopelessness is experienced both when cognitions focus on the nonattainability of success, and when the focus is on the nonavoidability of failure.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.43	0.190	Low positive correlation

*Hopelessness/Anxiety (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a low positive relationship between boredom and enjoyment with a correlation

coefficient of 0.43 with a 19% variance in the hopelessness to the anxiety of ZPPSU.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.54	0.294	Moderate negative correlation

*Hopelessness/Enjoyment (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a moderate negative relationship between hopelessness and enjoyment with a correlation coefficient of -0.54 with 29.4% of the variance in the hopelessness to the enjoyment of

the pre-service teacher in ZPPSU. Feeling of hopelessness do not incite enjoyment in mathematics online class among pre-service teachers.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.44	0.191	Low negative correlation

*Hopelessness/Pride (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a weak negative relationship between hopelessness and pride with a correlation coefficient of -0.44 with 19.1% of the variance in the hopelessness to pride in the pre-service teacher in

ZPPSU. Thus, implies that hopelessness has a small effect on the pride of the pre-service teacher in ZPPSU.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.40	0.156	Low positive correlation

*Anger/Anxiety (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a weak positive relationship between anger and anxiety with a correlation coefficient of 0.40 with a 15.6% the variance in the anger to the anxiety of the pre-service teacher in

ZPPSU. Thus, implies that anger has a small effect on the anxiety of pre-service teacher in ZPPSU.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.35	0.125	Low negative correlation

*Anger/Enjoyment (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a weak negative relationship between boredom and enjoyment with a correlation coefficient of -0.35 with a 12.5% the variance in the

anger to enjoyment in the pre-service teacher in ZPPSU. Thus, implies that anger has a small effect on the enjoyment of pre-service teacher in ZPPSU.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
0.65	0.428	Moderate Positive Correlation

*Enjoyment/Pride (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a moderate positive relationship between enjoyment and pride with a correlation coefficient of 0.65 with 42.8% of variance in the enjoyment to the pride of the pre-service teacher in ZPPSU. Implies that pre-service teachers who enjoy mathematics online class are likely to instigate pride. Pre-service teachers that are interested in mathematics online class and feels capable of dealing the teachers demand will enjoy

studying. And accompanied by effort or one's ability in mathematics student will instigate pride. According to Pekrun, Emotions relating to achievement activities are assumed to depend on the perceived controllability of the activity and on its value. If the activity is seen as being controllable and valued positively, enjoyment is instigated. According to Weiner, pride is held to be both ability- and effort-linked.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.21	0.046	Low negative correlation

*Anxiety/Enjoyment (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a low negative relationship between anxiety and enjoyment with a correlation coefficient of -0.21 with a 4.6% of variance in the anxiety to enjoyment of the pre-service teacher in

ZPPSU. Anxiety in mathematics online class has nothing to do with the enjoyment student experience in the mathematics online class.

<i>Pearson - r Coefficient</i>	<i>Coefficient of Determination</i>	<i>Interpretation</i>
-0.11	0.013	negligible correlation

*Anxiety/Pride (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a weak negative relationship between anxiety and pride with a correlation coefficient of -0.11 with 1.3% of variance in the anxiety to pride of the pre-service teacher in ZPPSU. Thus,

implies that anxiety does not affect pride of the pre-service teacher in ZPPSU.

Pearson - r Coefficient	Coefficient of Determination	Interpretation
-0.375	0.128	Low negative correlation

*Pride/Anger (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

The above table revealed a weak negative relationship between pride and anger with a correlation coefficient of -0.375 with 12.8 % of the variance in the pride to the

anger of the pre-service teacher in ZPPSU. Thus, implies that pride has a small effect on the anger of the pre-service teacher in ZPPSU.

Pearson - r Coefficient	Coefficient of Determination	Interpretation
-0.375	0.128	Low negative correlation

*Pride/Anger (Legend: <sup>s</sup> Significant at alpha = .05 level.)*

## FINDINGS, SUMMARY, CONCLUSION, AND RECOMMENDATION

This section concludes the study by dealing with a summary of findings, conclusions, and recommendations on academic emotions experience in online math class among pre-service teachers in the Zamboanga Peninsula Polytechnic State University.

This study was conducted through google forms at Zamboanga Peninsula Polytechnic State University. The respondents were students of the College of Teacher Education Department who are enrolled in the online math class. A quantitative cross-sectional survey was employed in the study. The Statistical tools used were descriptive statistics and correlation/regression.

Descriptive findings revealed a high weighted mean among positive academic emotion: enjoyment 3.37 and pride 3.59 compared to the negative emotion. Altogether, students experience more positive than negative emotions in online math classes in teacher education.

Second findings also revealed that there were positive associations between all negative emotions and especially high correlations emerged between

hopelessness/anger Boredom/anger; and Boredom/hopelessness. Interestingly, these correlations between the negative emotions were higher ( $.60 < r < .80$ ) than those between the positive emotions ( $.60 < r < .70$ ). The other interesting association is the relationship between positive and negative emotion which shows a negative correlation ( $-0.10 < r < -0.55$ ).

In a mathematics online class, teachers and institutions should encourage pleasant activity-related feelings, eliminate competing goal frameworks, and encourage autonomy and self-regulated learning.

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## Research Article

# A Study on the Attitude of the IX Standard Students towards Bengali Language in West Bengal

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### ABSTRACT

In West Bengal Bengali is the official language. The basic form of Bengali has been taught in West Bengal. The school in West Bengal will continue to teach Bengali as a compulsory language. It occupies a substantial position in the Educational field of India. Bengali is such a language which has a wider communicative value. But here the researcher saw completely different side of Bengali language. Bengali language is originated in the Indo-European language family. "Language Movement" redirects here. For other uses, see Language movement (disambiguation). Procession march held on 21 February 1952 in Dhaka. The Bengali Language Movement, also known as the Language Movement (Bengali: **ভাষা আন্দোলন** Bhasha Andolôn), was a political movement in former East Bengal (today Bangladesh) advocating the recognition of the Bengali language as an official language of the then-Dominion of Pakistan in order to allow its use in government affairs, the continuation of its use as a medium of education, its use in media, currency and stamps, and to maintain its writing in the Bengali script. The Language Movement catalyzed the assertion of Bengali national identity in East Bengal and later East Pakistan, and became a forerunner to Bengali nationalist movements, including the 6-Point Movement and subsequently the Bangladesh Liberation War and Indo-Pakistani War of 1971 in 1971. In Bangladesh, 21 February is observed as Language Movement Day, a national holiday. The Shaheed Minar monument was constructed near Dhaka Medical College in memory of the movement and its victims. Attitudes are the mental and neutral state of readiness organized through experience. Attitudes play important role in the life of language as; healthy attitudes restore language and unhealthy attitudes decay a language. Our attitudes are shaped or reshaped in a society and in society each and every language has its own status and due to change of status attitudes changes (Mian, 1998).

**Keywords:** attitude, bengali language, west Bengal, IX standard students

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## INTRODUCTION

### GIVING PURPOSE OF RESEARCH

Bengali is the most spoken language in West Bengal. With about 250 million native and about 300 million total speakers worldwide. It is the 7th most spoken language in the world by total number of native speakers and the 11th most spoken language by total number of speakers. The importance of this language to the South Asia can be noted by the fact that the National Anthem of Bangladesh, National Anthem of India, National Anthem of Sri Lanka and the National song of India were all first composed in the Bengali Language. "Mother language is what a baby child communicates for the first time with mother and father. It is a language a person never forgets, wherever that person lives. The mother language is a prism that determines the first notions of the world to a baby child. The umbilical cord between mother tongue and thought is inseparable. It is the mother tongue that represents thought, culture and heritage of an individual."-Barrister Harun ul Rashid, Former Bangladesh Ambassador to the UN

When the Dominion of Pakistan was formed by the partition of India in 1947, it was composed of various ethnic and linguistic groups, with the geographically non-contiguous East Bengal province (that was renamed in 1956 as East Pakistan) having a mainly Bengali population. In 1948, the Government of the Dominion of Pakistan ordained Urdu as the sole national language, sparking extensive protests among the Bengali-speaking majority of East Bengal. Facing rising sectarian tensions and mass discontent with the new law, the government outlawed public meetings and rallies. The students of the University of Dhaka and other political activists defied the law and organized a protest on 21 February 1952. The movement reached its climax when police killed student demonstrators on that day. The deaths provoked widespread civil unrest. After years of conflict, the central government relented and granted official status to the Bengali language in 1956. In 1999, UNESCO declared 21 February as International

Mother Language Day in tribute to the Language Movement and the ethno-linguistic rights of people around the world.

The use of English language is as per the requirement of being a part of globalization and there is nothing wrong in it. English is one such language that is understood by people from different castes and states, and therefore deserves to be the official language of India. English is perceived as a useful language to know mostly because of job opportunities and for education. People favor a particular language when they find that the language is a tool to achieve high status, economic advantage, basic security and survival and matters related to self-orientation. Integrative attitude, on the other hand, concerns someone's attachment with a particular speech community. People show such attitude in order to be identified as a member of the desired community. Hogan-Brun & Ramoniene (2005) found that the state's inclusive language and citizenship policies in Lithuania have led to the consolidation of society which has positively affected attitudes amongst the minority communities to learn the state language and to integrate. However, instrumental and integrative orientation to language attitudes are not necessarily opposite and alternatives, rather complementary to each other. A person may be motivated in different strengths by both orientations (Baker, 1992).

Attitude in general is a hypothetical psychological construct which defines or promotes certain behaviors and explains their direction and persistence. Allport (1935) defines, "attitude is a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (cited in Baker, 1992:11). Attitude is a convenient and efficient way of explaining consistent patterns in behavior. It often manages to summarize, explain and predict behavior (Baker, 1992). Attitudes, according to Crystal (1997: 215), are the feelings people have about their own language or the languages of others. Thus, attitude to

language is a construct that explains linguistic behavior in particular.

## A BRIEF REVIEW OF THE WORK ALREADY DONE IN THE FIELD

Anuradha, V., & Rengaraj, M. (2017). Students' Attitude towards English Language Learning and their Academic Achievement among First Year Engineering Graduates. The current research paper focuses on the attitude of the first year engineering students towards English Language in order to implement some innovative technique in teaching English language. It is an exploration in investigating the fresher's of first year B.Tech students' attitude towards English Language Learning and their association with their academic achievement. To meet the objectives of the study the primary data was collected from the first year B.Tech students. As samples for the case study, the researcher contacted one section of first year B.Tech of about 40 students from Dr. M.G.R. Educational and Research institute, University, Maduravoyal, Chennai. The students of 30 girls and 10 boys were taken into consideration. A closed ended Attitude questionnaire, developed by Samar Rukh - 2014 is used for the present study. The inventory consists of 10 statements. The findings suggest that girls and boys from English medium, private-aided school, exclusively girls school students have more Positive Attitude towards English Language learning and their association with their academic achievement than the regional medium students. [3]

Bobkina, J. & Fernandez de, M.C.D. (2012). Motivation and Attitudes towards Learning English: A Study of Engineering Undergraduates at the Technical University of Madrid. The present study aimed at investigating the relationship among EFL learners' speaking strategies use, attitude, and English language oral output. The data was collected from 150 EFL language institute students regarding the relationship among their speaking strategies use,

attitude, and English language oral output. To this end, three instruments of the Oral Communication Strategy Questionnaire (Nakatani, 2006), Attitude Scale (Rastegar, 2003), and Cambridge Preliminary English Test (PET), placement tool for language proficiency, were used. The results showed that there was a significant relationship between different subscales of communication strategies use and attitude of the intermediate Iranian EFL learners. Moreover, relationship between communication strategy use of EFL learners and their English language oral output was statistically significant. As a major conclusion, the importance of speaking strategy training in learner education with a regard to the learners' attitude towards language learning and their oral language output should not be ignored. [4]

Colak, A. (2008). Attitudes, Motivation and Study Habits of English Language Learners. The study was carried out with 82 second-year students at Ba'kent University using a survey designed on a five-point Likert-scale. The data collected were analyzed through descriptive statistics, a one-way ANOVA and Pearson correlation procedures. The participants were also asked to describe their general and vocabulary study habits. These descriptions were analyzed by means of categorization and illustrated using Excel. [5]

Dua, Hans.R. 1986. Language Use, Attitude and Identity Among Linguistic Minorities . The aim of this paper is to study the Finnish spoken in the Swedish Torne Valley, its use and development during the s and the s, and how it differs now from the Finnish spoken in the same area in the early s. The study also examines which people speak Finnish in this valley today and in what contexts, as well as how the Finnish language has changed and how linguistic attitudes. Linguistic Identity and Attitudes towards Spanish UNIVERSITY OF BERGEN, NORWAY September December SUMMARY Linguistic attitudes result from a complex interplay of social forces and express how language serves individual and

collective interests. The LIAS-project aims to study how. [6]

Getie, Addisu. (2020). Factors affecting the attitudes of students towards learning English as a foreign language. This study aimed at investigating on factors affecting the attitudes of grade 10 students towards learning EFL in Debremarkos Comprehensive Secondary School in Debre Markos town, Ethiopia. The researcher randomly selected 103 sample students (10%) out of the total population (1030) for the study. In order to gather data, a questionnaire was carefully and systematically adapted and designed. Nine sample students were also selected purposely for focus group discussion, and Grade 10 English teachers were selected for the interview. Then, the data were analyzed quantitatively and qualitatively. The findings of the study mainly showed that the attitudes of grade 10 students towards learning EFL is positive. There are social factors (e.g., English native speakers, peer groups and learners' parents) affecting students' attitudes positively. On the other hand, educational context factors like English language teachers, the English language learning situations (e.g., the classrooms, arrangements of seats and the physical learning environment) had negative impacts on students' attitude. However, the findings showed that target language learners have positive attitudes towards the other educational context factor that is the English textbook of grade 10 which means English as a foreign language teaching material in the study's context affect students' attitudes positively. By lowering the psychological variables (i.e. affective filters) for the target language learners, it is possible to aid the language learning process. Thus, as the implication of this study considers, the physical learning environment should be improved, and to achieve this, the government should work in conjunction with the school principals, teachers and societies. [8]

Ghazali, S, N. (2008). Learner background and their attitudes towards studying literature. This study aims

to gather information on students' background, such as gender, socioeconomic status, the location of schools, and find out which variables influence students' attitudes towards the Literature in English Component of the English Language Syllabus. Participants were students in arts and science classes from two schools, one located in a rural area and the other in a town. The instruments used were student questionnaires, interviews and their previous examination results. Data analyzed suggest that students' attitudes correlate with their proficiency level (indicated by previous examination results), which is also linked to the location of their school and their classes. [9]

Hohenthal, A. (2003). English in India: Loyalty and attitudes. *Language in India*. The purpose of this study will be to study language attitudes in India (especially attitudes towards English) and to analyze the use of languages in different domains (family, friendship, neighborhood, transactions, education, government, employment). Additionally, the aim is also to find out about the informants' preference for the model of the variety of English in India. [10]

Kitchakarn, O.. (2015). EFL learners' attitudes towards using computers as a learning tool in language learning. The study was conducted to investigate attitudes toward using computers as a learning tool among undergraduate students in a private university. In this regard, some variables which might be potential antecedents of attitudes toward computer including gender, experience of using computers and perceived abilities in using programs were examined. Data was collected from 192 undergraduate students enrolled in two fundamental English courses. The instrument in this study was a questionnaire. The findings revealed that students had positive attitudes towards using computers as a learning tool. The factors of gender and experience of using computers were not found to affect students' attitudes while the factor of perceived abilities in using programs had an effect on their attitudes. [11]

Kar, D., Saha, B., Mondal, B. (2014). Attitude of University Students towards E-learning in West Bengal. The present study was conducted for measuring the attitude of university students towards e-learning in West Bengal by taking 308 University level students from four Universities namely Sidho-Kanho-Birsha University, Jadavpur University, Visva-Bharati and Gourbanga University. The survey method has been adopted for the present study and stratified random sampling technique has been used in selecting the samples. A well-designed questionnaire, developed by the Investigators has used to collect primary data. The result revealed that students' have high attitude towards e-learning and their attitude scores did not differ significantly with their personal variables such as, gender, stream of study and residence. [12]

Kara, A. (2010). The Development Of The Scale of Attitudes Towards Learning. t Employers lament that science graduates, particularly engineering students, lack professional skills, despite increasing emphasis on teaching professional skills in their curriculum. Using the Theory of Planned Behavior as an overarching framework, one explanation for skill development gaps may be students' attitude towards learning professional skills. Our study purpose was to create a scale that accurately and consistently measures engineering students' attitudes towards learning professional skills. To create the scale, we used a rigorous measurement development methodology, beginning with survey item generation and critical review by subject matter experts. Data from a sample of 534 engineering college students were split into two sets to provide (1) a development sample upon which exploratory factor analyses and parallel analyses were conducted to form the initial scale, and (2) a confirmatory sample whereby we verified the scale structure and obtained initial validity evidence for distinct dimensions. A five-factor scale of 25 items for assessing engineering students' attitudes towards learning professional skills (ATLPS) obtained high-reliability estimates. Validity

evidence supported five distinct dimensions in leadership in teams, communication, civic and public engagement, cultural adaptability, and innovation. The ATLPS can be used to facilitate improvements in engineering education and research by understanding students' attitudes towards learning professional skills. Furthermore, researchers can expand the scale to include additional dimensions of professionalism and modify items to fit STEM disciplines where professional skill training is essential. [13]

Sharma, C. (2016). A study of attitude of Govt. secondary level student towards tuition. The present research deals with the study of attitude of students of secondary level of Govt. school towards tuition in respect of Mandsaur. For the research 100 students of Mandsaur city will be taken by random sampling. In the research analysis was done by self made questionnaire. In the questionnaire there were 19 questions and the given options are agree/disagree/not decided. In the questionnaire questions were based on the situation of teacher and school, A Social situation and higher achievement of the students. A Through annalasis We fond positive attitude towards tuition [20]

## PROPOSED METHODOLOGY DURING THE TENURE OF THE RESEARCH WORK

Objectives of the study:

- To find out the attitudes towards mother-tongue instruction.
- To find out the attitude towards Bengali language of male and female students.
- To find out different attitude studies state that attitudes vary from favorably to unfavorably or vice-versa in language learning and acquisition, choice and use of language in different domains and thus, surveys of attitudes provide social indicators of changing beliefs about language and the

chances of success in language policy implementation.

#### Hypotheses of the study:

The investigator has framed the following essential null hypotheses for the study. These are-

**OH1:** The rural students would not show more favorable attitude towards Bengali language than the urban students.

**OH2:** The boys would not show more favorable attitude towards Bengali language than the girls.

**OH3:** The urban boys would not show more favorable attitude towards Bengali language than the urban girls.

**OH4:** The rural boys would not show more favorable attitude towards Bengali language than the rural girls.

**OH5:** The rural boys would not show more favorable attitude towards Bengali language than the urban boys.

**OH6:** The rural girls would not show more favorable attitude towards Bengali language than the urban girls.

#### Research Design:

Researcher considered a quantitative descriptive research design to carry out the present study. In this regard, researcher considered judgmental sampling technique for this study and also considered three types of subsequent strata (i.e. gender, locality and gender plus locality) for current study.

#### Population of the study:

Researcher considered IX class students under WBBSE as the population for this study. For carrying out the study, researcher considered judgmental sampling process to select the actual area for study; in this case secondary schools had been chosen for this study in the periphery of Uttar Dinajpur district in West Bengal.

The Researcher also considered one hundred of class IX students, among one hundred students' fifty boys

and fifty girls from four schools, two schools from urban and two schools from rural area in Islampur sub-division of Uttar Dinajpur in West Bengal.

Table: 1

<i>Urban Male Students</i>	<i>Urban Female Students</i>	<i>Rural Male Students</i>	<i>Rural Female Students</i>
25	25	25	25

Sample Distribution

#### Tools and Technique:

The investigator will prepare one questionnaire for measuring of the Attitude towards Bengali language. This questionnaire will be eight dimensions. He will develop thirty-two items. These items were distributed over eight dimensions. Among of these items Sl. No (1-4), (5-8), (9-12), (13-16), (17-20), (21-24), (25-28) and (29-32) were selected for measuring the dimensions: (A1), (A2), (A3), (A4), (A5), (A6), (A7) and (A8). Several items measuring different objectives would find under each dimensions of attitude towards Bengali language. The language of each question would not complex. This questionnaire will be validity and reliability measurement.

#### Data collection:

By direct administration of the questionnaire survey data will collect from the students of four schools by the investigator.

## PRESENTATION AND ANALYSIS OF DATA

The present researcher was interested in constructing and standardizing a tool measuring Attitude towards Bengali language for a depth study of attitude for the student of class IX. For the set of information and for the administration of the survey the researcher selected four schools. The four schools were high schools and co-educational schools. Among these four schools, two co-educational schools were located in

the city areas and the other two co-educational schools were situated in the rustic areas. There were total one hundred students on which the researcher administrated his test. Out of these one hundred students fifty were girls and rest fifty were boys. Out of these fifty boys' students, fifty-five were city boys and the rest fifty-five were rustic boys. Out of these fifty girls' students, fifty-five were city girls and the rest fifty-five were rustic girls.

#### PRESENTATION OF THE FREQUENCY DISTRIBUTION OF THE SCORES OBTAINED BY THE STUDENTS IN THE ATTITUDE TOWARDS BENGALI LANGUAGE QUESTIONNAIRE (GENDER WISE AND STRATA WISE).

The collected data has little meaning to the investigator until they are arranged or classified in some systematic way. Therefore, it was the first to organize the collected data. For proper acquaintance with the scores obtained by the students if different sexes and strata and to fulfil the preliminary purpose

of computing the different statistics separately (Gender-wise and Strata-wise). The investigator presented the frequency division of the scores in the Attitude Towards Bengali Language Questionnaire of the student's sex-wise and strata-wise.

#### STATEMENT OF STATISTIC OF THE SCORES OF THE STUDENTS IN THE ATTITUDE TOWARDS BENGALI LANGUAGE QUESTIONNAIRE (GENDER WISE AND STRATA WISE)

The present researcher administered the Attitude towards Bengali Language Questionnaire upon one hundred students. The sample was chosen sex and strata-wise. After scoring the responses the investigator computed the statistics of the scores in the Attitude towards Bengali Language Questionnaire of the students. The particulars showing mean, median, standard division skewness and kurtosis had been shown in Table-2.

Table 2

Measures	Urban	Rural	Boys	Girls
N	50	50	50	50
Mean	122.42	122.2	125.04	119.58
Median	124.5	123	125.5	120.5
Mode	130	123	117	112
S.D	13.72037067	14.51670396	15.09285545	12.49014305
S.K	-0.630050914	-0.742831104	-0.931716865	-0.675726577
KU	0.652075296	0.887060974	1.062575451	0.907624084
Q.D	9.5	9.5	10	8

#### STATEMENT OF THE GRAPHICAL REPRESENTATION OF THE SCORES OF THE STUDENTS IN THE ATTITUDE TOWARDS BENGALI LANGUAGE QUESTIONNAIRE BY OGIVES.

It for computing and showing the difference in performance in the Attitude Towards Bengali Language Questionnaire between the gender and

between different strata through geographical (ogives) representation, the investigator presented the distribution of scores of the students (Gender-wise and strata-wise).

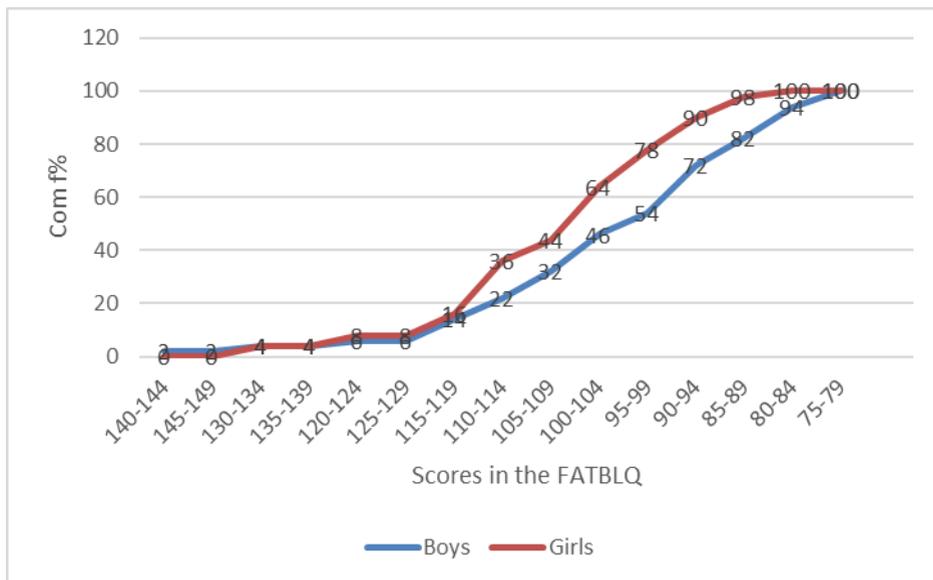


Fig-1: Graphical representation of the distribution of scores obtained by the boys and the girls' students in the Attitude Towards Bengali language Questionnaire.

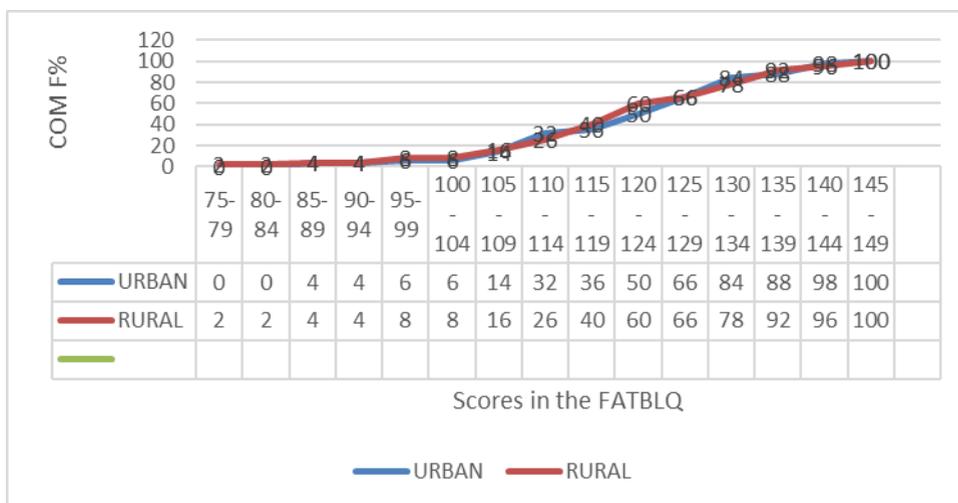


Fig-2: Graphical representation of the distribution of scores obtained by the city and rustic students in the Attitude Towards Bengali language Questionnaire.

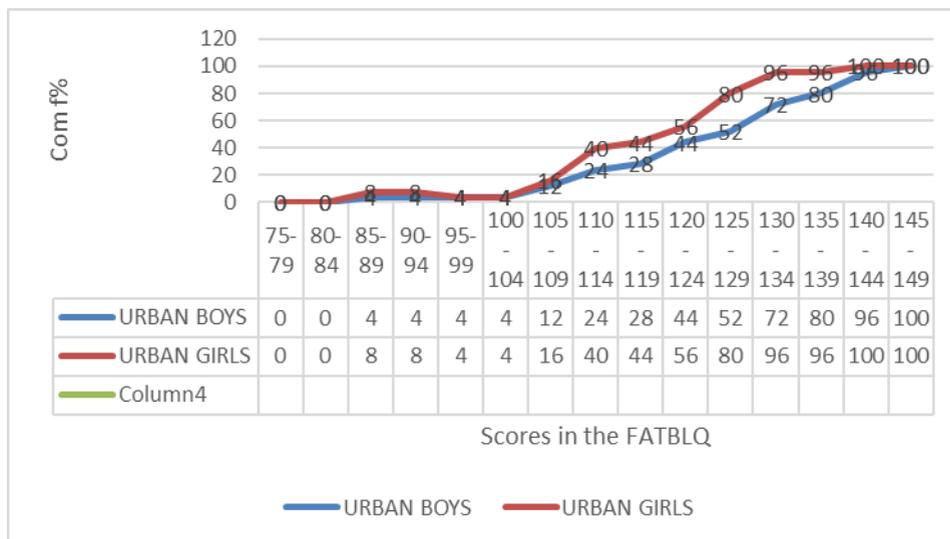


Fig-3: Graphical representation of the distribution of scores obtained by the city boys and city girls' students in the Attitude Towards Bengali language Questionnaire.

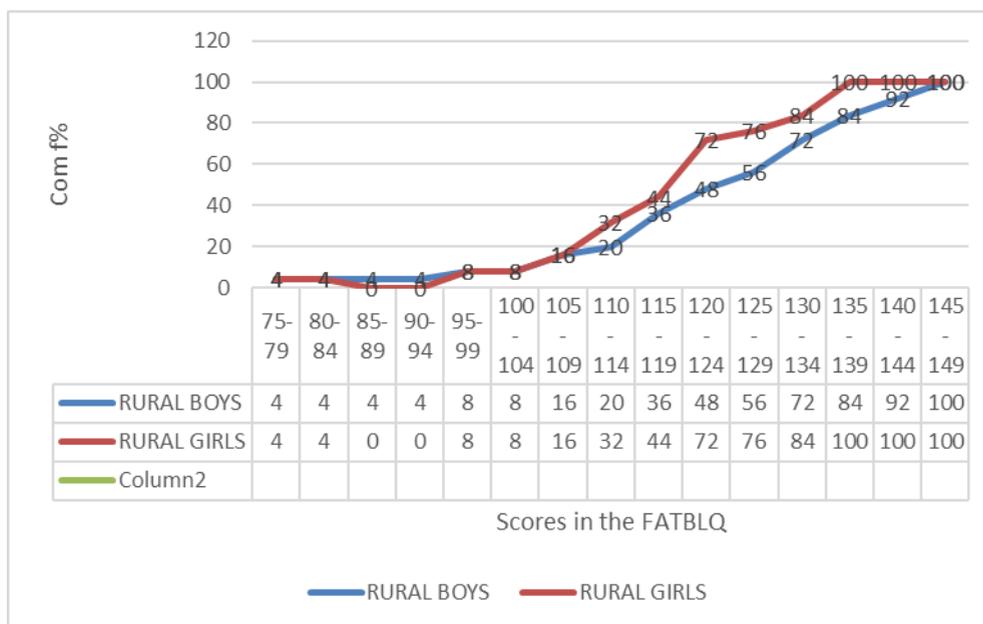


Fig-4 : Graphical representation of the distribution of scores obtained by the rustic boys and rustic girls students in the Attitude Towards Bengali language Questionnaire.

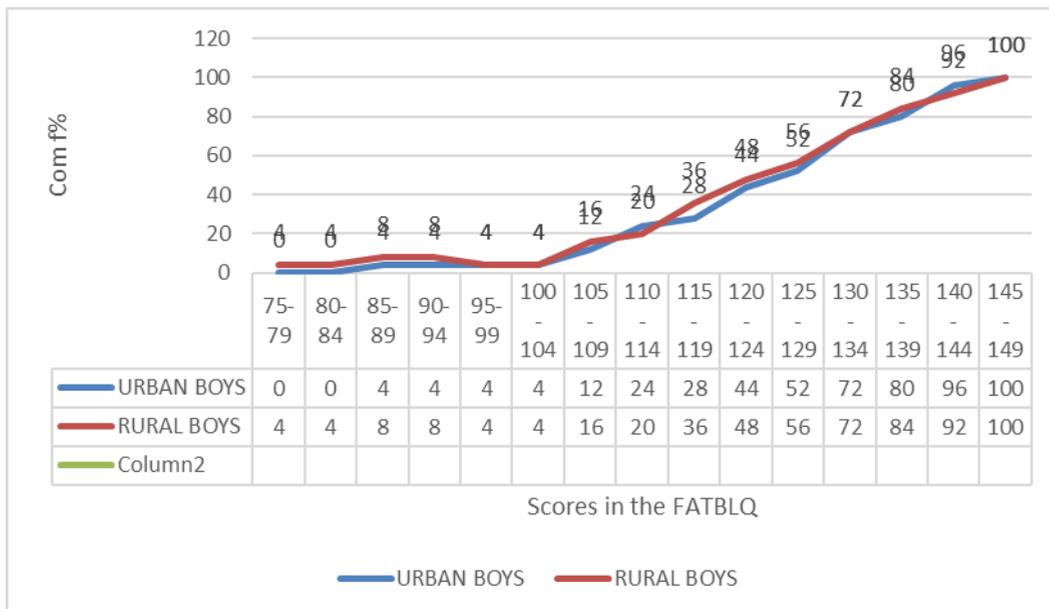


Fig-5 : Graphical representation of the distribution of scores obtained by the city boys and rustic boys students in the Attitude Towards Bengali language Questionnaire.

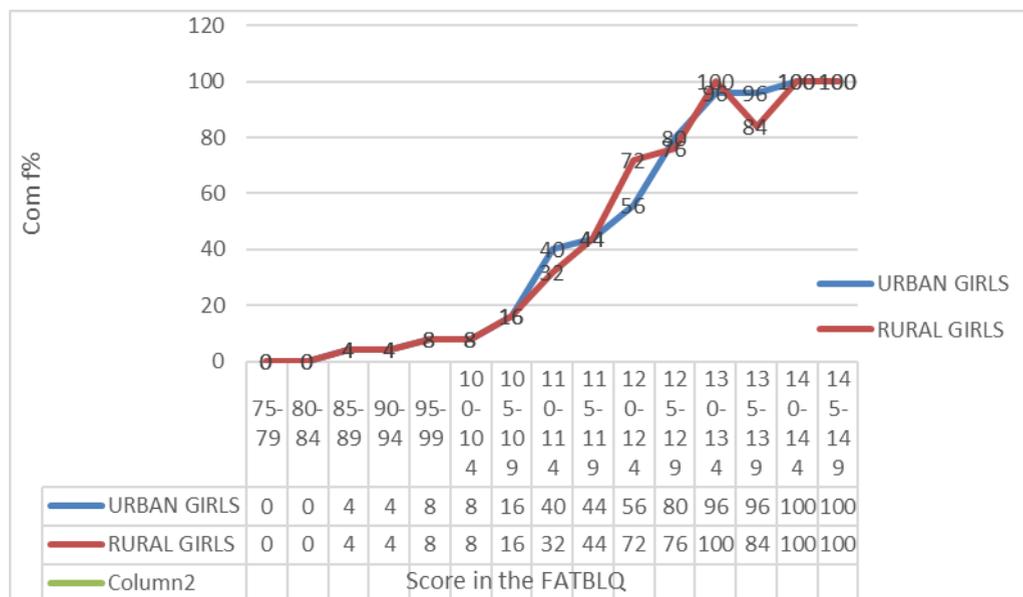


Fig-6 : Graphical representation of the distribution of scores obtained by the city girls and rustic girls students in the Attitude Towards Bengali language Questionnaire.

## FINDING OUT THE SIGNIFICANCE OF DIFFERENCE IN THE MEAN SCORES OF THE ATTITUDE TOWARDS BENGALI LANGUAGE QUESTIONNAIRE.

It is used to find out the significance of difference in the mean scores in the Attitude towards Work Education Questionnaire of the students (Gender-wise and strata-wise) by the t-test for specifying the mean difference of the scores of the students in the Attitude towards Work Education Questionnaire between two genders and between two strata, the investigator applied t-test. All results of these test were shown in Table-4.11: Statement of the significance of difference in the mean scores in the Attitude Towards Work Education Questionnaire of the students (Gender-wise and strata-wise) by t-test.

Table 3

GROUPS	t Values
BOYS-GIRLS	1.826
URBAN-RURAL	0.557
URBAN-BOYS URBAN- GIRLS	1.51
RURAL-BOYS RURAL- GIRLS	1.671
URBAN-BOYS RURAL- BOYS	0.031
URBAN-GIRLS RURAL-GIRLS	0.132

## SUMMARY OF THE STUDY

The current lessons highlighted the Attitude towards Bengali Language. The present researcher discusses the importance of the Bengali Language in human life, society and country. He also discussed its relation with general education. Then he passed on to the crisis of the study, and clearly delineated the process of study. The researcher took the opportunity of presenting his acquaintance with various prose connected to the present study. The examiner formed some null hypothesis to proceed towards his problem. The important and relevant terms of this study were also defined. In the process of the study was narrated chronologically by the investigator. The researcher described the procedure of the construction of the Attitude towards Bengali Language Questionnaire.

He had analyzed the content areas of the Attitude towards Bengali Language Questionnaire. The researcher selected eight dimensions for the Attitude towards Bengali Language Questionnaire. He has given the proper weight age to each dimension by surveying the opinion of the experts on these areas. In this part he also describes the detailed procedure of constructing the questionnaire along with its “scoring key”. Then he followed the required procedure to standardize the questionnaire. The test- retest method was followed to determine the consistency and content legitimacy for determining validity of the questionnaire. To understand the characteristics of the distribution of the scores obtained by the students (Gender-wise and strata-wise) in the Attitude towards Bengali Language Questionnaire, the scores were presented in frequency distributions. The Mean, QD, Median, SD, S.K, K.U, Mode of the distribution have been found out. Different ogives were drawn on the same axes showing a comparison between the Attitudes towards Bengali Language Questionnaire of the different groups (Gender-wise and strata-wise). Next, the researcher proceeded to find out” in order to know the differences in mean of different categories of students. Hence, comparative study on the mean scores between different groups (Gender-wise and strata-wise) was computed by the researcher. The ‘t’ values found were not significant at .01 level.

## INTERPRETATION AND CONCLUSION OF THE STUDY

In the current lessons the researcher attempted to make critical study of the results obtained. For this purpose, the scores of the Attitude towards Bengali Language Questionnaire were grouped into frequency distributions and the statistics (Mean, QD, Median, SD, S.K, K.U, and Mode) were made for each frequency distribution. From these statistics it was concluded that-

1. (a) The frequency distribution for the total scores in the attitude towards education was not a normal one; it was negative skewed.

(b) The frequency distribution for the boys, girls, and urban, rural was also negative skewed.

(c) The frequency distribution for the urban boys, urban girls, rural boys, rural girls were negative skewed.

2. The Attitude towards Bengali Language Questionnaire was administered upon one hundred students. The sample was chosen Gender-wise and strata-wise. The statistics of the students in the Attitude Towards Bengali Language Questionnaire showing Mean, QD, Median, SD, S.K, K.U, Mode, were as follows-

	MEAN	MEDIAN	MODE	SD	SK	KU	QD
URBAN	122.42	124.5	130	13.72	-0.63	0.65	9.5
RURAL	122.2	123	123	14.51	-0.74	0.88	9.5
BOYS	125.04	125.5	117	15.09	-0.93	1.06	10
GIRLS	119.58	120.5	112	12.49	-0.67	0.90	8
URBAN BOYS	125.64	128	144	14.48	-0.86	0.99	11
URBAN GIRLS	119.2	121	128	12.36	-0.75	1.34	8
RURAL BOYS	124.44	125	137	15.95	-1.01	1.41	10
RURAL GIRLS	119.96	120	123	12.85	-0.65	0.97	13.75

3. The following conclusion was drawn from the ogives-

(a) From the ogives of the distribution of scores obtained by the boys and girls in the Attitude towards Bengali Language Questionnaire, was evident that the performance of boys and girls were almost same.

(b) The ogives of the distribution of scores obtain by the urban and rural students in the Attitude towards Bengali Language Questionnaire; it was evident that the urban student's performance was a bit lower than the rural pupils.

(c) The ogives of the distribution of scores obtained by the urban boys and urban girls in the Attitude towards Bengali Language Questionnaire, was evident that the performance of urban boys performance was a bit improved than the urban girls.

(d) The ogives of the distribution of scores obtained by the rural boys and rural girls in the Attitude towards Bengali Language Questionnaire, it was evident that the performance of rural boys' performance was higher than the rural girls.

(e) The ogives of the distribution of scores obtained by the urban boys and rural boys in the Attitude

Towards Bengali Language Questionnaire, it was evident that the presentation of ruural boys performance was bit improved than urban boys.

(f) The ogives of the distribution of scores obtained by the urban girls and rural girls in the Attitude Towards Bengali Language Questionnaire, it was evident that the both graphs overlapping throughout the end.

4. In order to find out the mean difference of various group (Group-wise and strata-wise) the 't' test was followed as the following results were obtained.

GROUPS	t Values
BOYS-GIRLS	1.826
URBAN-RURAL	0.557
URBAN BOYS-URBAN GIRLS	1.51
RURAL BOYS-RURAL GIRLS	1.671
URBAN BOYS-RURAL BOYS	0.031
URBAN GIRLS-RURAL GIRLS	0.132

Through no 't' value were found significant. So, all the null hypotheses retained.

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## Research Article

# Academic Emotions Antecedents of Dropout Intentions Among College Freshmen: An Assessment

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## ABSTRACT

College freshmen often face challenges in their shift to higher education and experience a different level of academic pressure. These difficulties and pressures may provoke various negative emotions, leading to the high intention of dropping out of their course. Thus, it is vital to understand the role of academic emotions concerning minimizing dropout and increasing academic success among freshmen since they are in the critical first academic year as it influences overall academic success. Thus, this study was conducted to determine how academic emotions would predict dropout intentions among college freshmen. A sample of 156 college freshmen from a state university department was randomly selected through stratified and systematic sampling procedures. Academic Emotions and Dropout Intention questionnaires were adapted, validated and pilot-tested. The statistical tools used to analyze data were mean, standard deviation, Pearson - r correlation, and multiple regressions. Findings reveal that freshmen experience relatively higher positive emotions (enjoyment, hope and pride) than negative emotions (anger, anxiety, shame, hopelessness and boredom). Positive emotions were positively correlated, while negative ones were also positively correlated. Positive emotions and negative emotions were negatively correlated. Positive and negative emotions were positively and negatively correlated to the dropout intention. Among the academic emotions, pride and boredom were the significant predictors; the former was a positive predictor, while the latter was a negative predictor of dropout intentions among freshmen. This study recommends that higher education institutions are encouraged to promote positive academic emotions to minimize dropout intentions among college freshmen.

**Keywords:** Philippines, antecedents, academic emotions, dropout intention, college, freshmen

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## INTRODUCTION

Attrition studies have shown that a high attrition rate frequently occurs among college freshmen (Dennis, 1998; Levitz et al., 1999, cited in Corley, 2003). According to Tinto (1987), "early-stage separation from a previously established social system is the most difficult step for a college student beginning to socially integrate into an institution" (cited in Corley, 2003). The phenomenon of high attrition among college freshmen can be attributed to the challenges they faced in their shift to higher education. They experience a different level of academic pressure than when they were in high school. These difficulties and pressures may provoke a variety of negative emotions, which could lead to the high intention of dropping out from their course, which is a warning of actual dropout. In the study of Ruthig et al. (2007), there is a positive relationship between negative academic emotions and voluntary course withdrawal. Putwain et al. (2013) also found that positive academic emotions lead to better achievement among freshmen at the end of the academic year. Moreover, Pekrun (2006) claims that emotions are regulated by how students value learning and are socially constructed. Thus, students exchanged emotional experiences with their classmates, teachers, peers in the school setting, and their parents at home. Therefore, it is vital to understand the role of academic emotions concerning minimizing dropout among freshmen since they are in the critical first academic year, which influences their overall academic success.

The Control - Value Theory of Academic Emotions is a theoretical model that looks at how motivational beliefs and competency provoke different emotions that students experience in educational settings (Pekrun & Stephens, 2010). Academic emotions are defined as learners' emotional experiences related to the educational processes of teaching and learning in a school or university setting. This is based on expectancy-value (Eccles & Wigfield, 2002) and attribution theories (Weiner, 2008). Learning-related emotions can be differentiated by valence (positive vs.

negative) and activation (activating vs. deactivating emotions). Positive activating emotions are thought to preserve mental resources, focus attention on the learning activities, support interest and intrinsic motivation, and facilitate deep learning. In contrast, negative deactivating emotions is the opposite. Moreover, deactivating positive emotions is thought to lessen attention and effort, but they can support long-term motivation to re-engage with learning. Activating negative emotions can reduce mental resources by inducing extraneous thinking, such as worries about failure in test anxiety and undermining intrinsic motivation (Pekrun et al., 2002).

Many pieces of research have cited the theory above (Ainley et al., 2005; Reschly & Carolina, 2008; Frenzel et al., 2007; and Pekrun et al., 2007). However, most of these studies have explored this theory among general student populations. There has been a little inquiry on how academic emotions as antecedents to students who are at-risk of dropping out, as determined in their drop out intentions. Thus, this study would investigate how academic emotions would predict dropout intentions among college freshmen. It is vital to understand the role of academic emotions concerning minimizing dropout and increasing academic success among freshmen since they are in the critical first academic year, which influences overall academic success. Results of this study added to the growing knowledge on academic emotions and dropout intentions. These results may help design instructions or interventions that help freshmen adjust from high school to college.

## OBJECTIVES OF THE STUDY

The purpose of the study was to investigate academic emotions as antecedents on the dropout intention among college freshmen. Specifically, this study aimed to: (1) determine whether there is a significant relationship between dropout intention and academic emotions, namely, enjoyment, hope, pride, anger, anxiety, shame, hopelessness and boredom; (2)

determine whether these academic emotions would significantly predict freshmen's dropout intention.

## RESEARCH HYPOTHESES

This study hypothesized the following:

- Positive emotions are significantly and positively correlated.
- Negative emotions are significantly and positively correlated.
- There is a significant negative correlation between positive and negative emotions.
- Positive emotions significantly and negatively predict dropout intentions among college freshmen.
- Negative emotions significantly and positively predict dropout intentions among college freshmen.

## METHODOLOGY

### Population and Sampling Procedure

The target population of this study was college freshmen of the College of Teacher Education of Zamboanga Peninsula Polytechnic State University (ZPPSU). There are five teacher education programs offered: Bachelor of Elementary Education (BEEd); Bachelor of Secondary Education (BSEd) major in

Mathematics; Bachelor of Physical Education (BPed); Bachelor of Technology and Livelihood Education (BTLED) majors in Home Economics (HE), Industrial Arts (IA) and Information and Communication Technology (ICT); and Bachelor of Technical – Vocational Teacher Education (BTVTED) majors in Automotive Technology, Civil Technology, Drafting Technology, Electrical Technology, Electronics Technology, Food Service Management, Garments, Fashion Design, Heating, Ventilating and Airconditioning Technology, Mechanical Technology and Welding and Fabrication Technology.

An a priori power analysis was conducted using G\*Power 3 (Faul et al., 2009) to determine the required minimum sample size for the multiple regression analysis. Based on a two-tailed test, a medium effect size ( $f^2 = .102$ ) based on a similar study and an alpha of .05, a sample size of 156 participants was required to achieve a power of .80. The participants were randomly selected through stratified and systematic sampling procedures. The mean age was 19.67, and the standard deviation was 2.45 years (ranging from 17 to 30 years). Table 1 summarizes the distribution of the participants according to courses across gender.

Table 1 Participants of the Study according to Courses across Gender

Teacher Education Courses	Gender		f	%
	Male	Female		
BEED	7	25	32	20.5
BSED MATH	9	7	16	10.3
BPED	15	16	31	19.9
BTLED IA	4	7	11	7.1
BTLED HE	2	9	11	7.1
BTLED ICT	3	3	6	3.8
BTVTED AUTO	3	1	4	2.6
BTVTED CIVIL	3	-	3	1.9
BTVTED DRAFT	4	5	9	5.8
BTVTED ELEXT	2	5	7	4.5
BTVTED ELECT	5	-	5	3.2
BTVTED FSM	1	8	9	5.8
BTVTED GFD	2	10	12	7.7
<b>Total</b>	<b>60</b>	<b>96</b>	<b>156</b>	<b>100.0</b>

### Measures

Academic Emotion Questionnaire. This questionnaire was adapted from the Academic Emotions Questionnaire (AEQ; Pekrun et al., 2005, 2011), a five-point Likert scale (1 = Strongly disagree; 5 = Strongly agree). Some words were changed from the original instrument to be more appropriate in the study context. To keep the questionnaire short, only four items were selected from the eight subscales: enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom. The original AEQ questionnaire was very lengthy. Bachman and Herzog (1981) claim that respondents answering lengthy questionnaires are more likely to give the same answers to most or all of the items than those responding to shorter questionnaires.

Drop out Intention Questionnaire. This questionnaire was adapted from the Freshman Orientation Survey (Brown, 2012), consisting of eight items. Some words were changed from the original instrument to be more appropriate in the study context. College freshmen reported their possibility of shifting their major or leaving the college (1 = Very unlikely; 5 = Very likely).

Both questionnaires were validated and pilot tested. All Cronbach's alpha values indicate satisfactory internal consistency reliability. The table below shows the alpha value for each subscale of academic emotions and the dropout intention questionnaire. Cronbach's alpha values greater than 0.7 indicate satisfactory internal consistency reliability (Malhotra & Birks, 2007).

Table 2 Reliability of the Research Questionnaires

Questionnaires	Cronbach's Alpha
Academic Emotions	
Enjoyment	.759
Hope	.756
Pride	.719
Anger	.748
Anxiety	.749
Shame	.789
Hopelessness	.777

Boredom	.722
Drop out Intention	.781

## RESULTS AND DISCUSSION

Table 3 below shows the Pearson - r coefficients between the academic emotion subscales and dropout intention. These correlations are necessary assumptions that we need to check to determine whether or not there is a linear relationship between academic emotions and dropout intentions. This is also one way to check multicollinearity among the academic emotion subscales since these are considered predictors in this study.

Table 3 Pearson - r Correlation Coefficients between Variables

Variables	1	2	3	4	5	6	7	8
(1) Enjoyment								
(2) Hope	.736							
(3) Pride	.609	.642						
(4) Anger	-.256	-.263	-.152					
(5) Anxiety	-.196	-.313	-.124	.536				
(6) Shame	-.265	-.288	-.249	.535	.615			
(7) Hopelessness	-.394	-.401	-.390	.518	.535	.724		
(8) Boredom	-.451	-.421	-.376	.605	.512	.495	.583	
(9) Drop out Intentions	-.447	-.379	-.462	.294	.223	.259	.378	.441

Note: All correlation coefficients are significant alpha = .05

The table reveals that the positive emotions; enjoyment, hope and pride, were positively correlated while the negative emotions; anger, anxiety, shame, hopelessness and boredom, were also positively correlated. Moreover, positive emotions and negative emotions were negatively correlated. Positive and negative emotions were positively and negatively correlated to the dropout intention.

Multiple regression was run to predict dropout intentions among college freshmen with academic emotions as predictors. As evaluated by partial regression plots and a plot of studentized residuals against the predicted values, there was linearity. As assessed by a Durbin-Watson statistic of 1.684, residuals were independent, which is close to 2. There was homoscedasticity, as evaluated by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no

multicollinearity among predictors, as measured by tolerance values greater than 0.1. The VIF value of 1.165, which is not substantially greater than 1, indicates that the assumptions of no multicollinearity between predictors were met. There were no studentized deleted residuals greater than  $\pm 3$  standard deviations; no leverage values greater than 0.2, and values for Cook's distance above 1. The assumption of normality was met, as evaluated by a Q-Q Plot. The multiple regression model statistically significantly predicted dropout intentions,  $F = 8.78$ ,  $p$

$< .05$ . The adjusted R squared of 28.7% indicates the variation in dropout intentions attributed to the predictors. However, only two academic emotion subscales, pride and boredom, added statistically significantly to the prediction,  $p < .05$ . The pride subscale was a negative predictor, while the boredom subscale was a negative predictor of dropout intentions among freshmen. Regression coefficients, standard errors and beta coefficients can be found in Table 4 (on the next page).

Table 6 Summary of Multiple Regression of Academic Emotions for Predicting Dropout Intentions among College Freshmen (n = 156)

	B	SEB	$\beta$
Constant	18.842	3.568	
Enjoyment	-.183	.208	-.098
Hope	-.136	.199	-.077
<b>Pride</b>	<b>-.511</b>	<b>.177</b>	<b>-.277*</b>
Anger	.106	.140	.071
Anxiety	.024	.151	.015
Shame	.084	.141	.064
Hopelessness	.130	.131	.110
<b>Boredom</b>	<b>.304</b>	<b>.154</b>	<b>.197*</b>

Note:  $R = .569$ ,  $R^2 = .323$ ,  $Adj. R^2 = .287$ ,  $F = 8.78$ ,  $p < .05$

\* Significant at  $\alpha = .05$  level.

The result indicates that as students feel more proud of studying, they will be less likely to drop out of their course. On the contrary, when students feel bored about the school, they are more likely to drop out of their course. These findings are incongruent to the study of Ruthig et al. (2007), that there is a positive relationship between negative academic emotions and voluntary course withdrawal, while positive academic emotions do not. However, this is inconsistent with Respondek et al. (2017) findings that enjoyment or boredom has no specific impact on the intention to drop out. Negative emotions are likely higher among students who dropped out than those who finished their studies (Pekrun et al., 2002). Thus, instructors

must support and pay attention to positive academic emotions to moderate dropout intentions among freshmen. In coordination with the Guidance Office, the university could offer training regarding emotion regulation. In general, it is a must that freshman-supporting programs be promoted to help freshmen adjust during their transition from high school to college.

## CONCLUSION, RECOMMENDATION AND LIMITATION OF THE STUDY

The present study showed the importance of academic emotions on the students' academic success at the college or university level. This inquiry supplements the scarce literature about the predictive effects of academic emotions on students' academic success by investigating the dropout intentions among college freshmen as the outcome variable. This investigation can further be extended against the actual dropout. Future researchers may extend this study by including other predictors, like, achievement goal orientation. However, the findings of this may only be valid for the college freshmen of the College of Teacher Education. This study can also be reanalyzed with the entire cohort of students in the college together with other consequent and antecedent variables. A longitudinal study can analyze the causality of attributional variables on dropout intention. The findings could have been different if the survey had been conducted at the beginning or towards the middle of the semester.

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## Research Article

# Job Satisfaction of Secondary School Teachers Vis-À-Vis Teachers Efficiency in Work Performance

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### ABSTRACT

Toropova (2021) stated that teacher job satisfaction merits closer attention. Not only is job satisfaction closely related to teacher retention, but it also contributes to the well-being of teachers and their over-all efficiency in work performance. The study generally aimed at determining the teachers' job satisfaction and teacher's efficiency in work performance. This quantitative study made use of a descriptive survey design to find out the teacher job satisfaction towards teachers efficiency in work performance of secondary school teacher in the Districts of Naval, Division of Biliran. Furthermore, the respondents of this study composed of 142 teachers in the secondary schools of Districts I-IV of Naval in the Division of Biliran. Stratified random sampling was employed in choosing the teacher respondents of this study so that there will be appropriate representation of the teachers per school. It has been revealed that the teachers' job satisfaction reached an over-all result of being satisfied in the workplace. This implies that the teachers felt contented if they are comfortable in their work. This can still be enhanced by actively working and collaborating with school heads and stakeholders for the betterment and improvement of the teachers in the workplace. On the other hand, teachers believed their efficiency to be quite a bit which entails the need for them to be motivated and empowered in their job. This can be done through peer mentoring or counselling. Proper and adequate technical assistance should also be provided to teachers, most especially those with low performance at school.

**Keywords:** Public Secondary School Teachers, teacher's job satisfaction, teacher's efficiency

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## INTRODUCTION

Toropova (2021) specified that teacher shortage is an international problem thus, teacher job satisfaction merits closer attention. Not only is job satisfaction closely related to teacher retention, but it also contributes to the well-being of teachers and their over-all work performance or work efficiency.

Being said, teacher job satisfaction has many important and far-reaching implications. First, it contributes to teacher well-being as satisfied teachers are less susceptible to stress and burnout (Kyriacou, et.al, 1977; Skaalvik, 2011). In addition, there is evidence that teachers who are content with their job also feel better (Collie, et.al, 2012, Spilt, et.al, 2011). Furthermore, as Kunter, et.al (2013) stated that satisfied teachers offer higher instructional quality and better learning support for their students. This simply means that content teachers demonstrate stronger job commitment and are less prone to leave the profession (Blömeke, 2017).

On the other hand, Klassen et al. (2009) states that teachers' self-efficacy has progressively gained an important role in school psychology research as a result of its implications for teaching effectiveness, instructional practices, and for students' academic achievement. Considerable research has shown that teachers with high levels of self-efficacy experience higher levels of job satisfaction, lower levels of job-related stress and face less difficulties in dealing with students' misbehaviors (Caprara et.al, 2003). Moreover, Djigić (2014) found out that teachers with higher levels of openness to experience and conscientiousness reported a stronger sense of efficacy. Therefore, improved teacher self-efficacy can result in improved teacher mental health and job satisfaction, and students' academic performance (Bandura, 1977).

Toward this end, the researcher opted to conduct the study to clearly determine the teachers' job satisfaction vis-à-vis teachers' efficiency in work

performance in the Districts of Naval I-IV, Naval, Biliran Province.

## OBJECTIVES OF THE STUDY

The study generally aimed at determining the teachers' job satisfaction and teacher's efficiency in work performance. Specifically, purportedly aimed to: 1) Ascertain the teachers' job satisfaction; 2) Determine the teachers' efficiency in work performance; 3) Design a Training and Development Program for Teachers.

## METHODOLOGY

This quantitative study made use of a descriptive survey design to find out the teacher's job satisfaction and efficiency in work performance of secondary school teacher in the Districts of Naval, Division of Biliran. Moreover, this study took place in the Districts of Naval I-IV, Naval, Biliran Province. It was participated only by the public secondary schools; where no such study had been made in the past and the researcher being a secondary school teacher.

Furthermore, the respondents of this study composed of 142 teachers in the secondary schools of Districts I-IV of Naval in the Division of Biliran. Stratified random sampling was employed in choosing the teacher respondents of this study so that there will be appropriate representation of the teachers per school. For teacher respondents, the survey questionnaire was composed of two parts: Part I was the Minnesota Satisfaction Questionnaire, Copyright 1977. It was lifted from the Vocational Psychology Research, University of Minnesota, USA which is composed of 20 items and a five point Likert Scale: 5- Very Satisfied; 4- Satisfied; 3- Neither Satisfied nor Dissatisfied, 2Dissatisfied and 1-Very Dissatisfied. Part II was the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001) designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. It utilized a five point Likert scale: 5-

A Great Deal, 4- Quite A Bit, 3- Some Influence, 2- Very Little, and 1- Nothing.

### Teachers' Job Satisfaction

The table below presents the level of teachers' job satisfaction.

## RESULTS AND DISCUSSION

This chapter discusses the analysis of the data gathered with their corresponding presentation: Teachers' Job Satisfaction and Teachers' Efficiency

Table 1. Teachers' Job Satisfaction

No.	Statement	WM	Description
1.	Being able to keep busy all the time	3.68	Satisfied
2	The chance to work alone on the job	3.56	Satisfied
3	The chance to do different things from time to time	3.67	Satisfied
4	The chance to be 'somebody' in the community	3.51	Satisfied
5	The way my boss handles his/her workers	3.54	Satisfied
6	The competence of my supervisor in making decisions	3.59	Satisfied
7	Being able to do things that don't go against my conscience	3.50	Neither satisfied nor dissatisfied
8	The way my job provides for steady employment	3.89	Satisfied
9	The chance to do things for other people	3.77	Satisfied
10	The chance to tell people what to do	3.56	Satisfied
11	The chance to do something that makes use of my abilities	3.65	Satisfied
12	The way company policies are put into practice	3.50	Neither satisfied nor dissatisfied
13	My pay and the amount of work I do	3.56	Satisfied
14	The chances for advancement on this job	3.52	Satisfied
15	The freedom to use my own judgment	3.58	Satisfied
16	The chance to try my own methods of doing the job	3.63	Satisfied
17	The working conditions	3.49	Neither satisfied nor dissatisfied
18	The way my co-workers get along with each other	3.70	Satisfied
19	The praise I get for doing a good job	3.65	Satisfied
20	The feeling of accomplishment I get from the job	3.63	Satisfied
	AWM	3.61	Satisfied

The table above shows the responses of the teachers as to their level of job satisfaction which revealed an over-all result as “Satisfied” (AWM=3.61). It is evidently shown in the aforcited table that teachers' job satisfaction is imperative as to extreme weighted mean of 3.89 with a satisfied description in the indicator, “the way my job provides for steady employment.” In this manner, having a regular salary means a lot to them. However, in the indicator “the working conditions” showed the lowest weighted mean of 3.49 neither satisfied nor dissatisfied. The result means that in terms of job satisfaction most of them were just satisfied on their job.

This implies that the teachers felt contented and/or satisfied if they are comfortable in their work. Based on the evidence acquisition, in the study of Velmurugan (2016) in his statements that in order to attract efficient people towards teaching profession and to retain the committed teachers in the same profession their job satisfaction level has to be improved by offering decent salary, convenient working time, providing necessary freedom and assistance for their professional growth etc. The findings further implies a mere satisfaction of the job is always associated with contentment.

### Teachers' Efficiency

Table 2 presents the level of teachers' work efficiency.

Table 2. Teachers' Efficiency

No.	Statement	WM	Description
1	How much can you do to get through to the most difficult students?	3.84	Quite A Bit
2	How much can you do to help your students think critically?	3.77	Quite A Bit
3	How much can you do to control disruptive behavior in the classroom?	3.83	Quite A Bit
4	How much can you do to motivate students who show low interest in school work?	3.88	Quite A Bit
5	To what extent can you make your expectations clear about student behavior?	3.75	Quite A Bit
6	How much can you do to get students believe they can do well in school work?	3.91	Quite A Bit
7	How well can you respond to difficult questions from your students?	3.77	Quite A Bit
8	How well can you establish routines to keep activities running smoothly?	3.82	Quite A Bit
9	How much can you do to help your students' value learning?	3.94	Quite A Bit
10	How much can you gauge your student comprehension of what you have taught?	3.83	Quite A Bit
11	To what extent can you craft good questions for your students	3.84	Quite A Bit
12	How much can you do to foster student creativity	3.80	Quite A Bit
13	How much can you do to get children to follow classroom rules?	3.82	Quite A Bit
14	How much can you do to improve the understanding of a student who is falling	3.81	Quite A Bit
15	How much can you do to calm a student who is disruptive or noisy?	3.81	Quite A Bit
16	How well can you establish a classroom management system with each group of students?	3.84	Quite A Bit
17	How much can you do to adjust your lessons to the proper level for individual students?	3.85	Quite A Bit
18	How much can you use from a variety of assessment strategies?	3.82	Quite A Bit
19	How well can you keep a few problem students from ruining the entire lesson?	3.76	Quite A Bit
20	To what extent can you provide an alternative explanation or example when students are confused?	3.75	Quite A Bit
21	How well can you respond to defiant students?	3.66	Quite A Bit
22	How much can you assist families in helping their children do well in school?	3.64	Quite A Bit
23	How well can you implement alternative strategies in your classroom?	3.80	Quite A Bit
24	How well can you provide appropriate challenges for every capable student?	3.76	Quite A Bit
	AWM	3.81	Quite A Bit

The foregoing table disclosed the responses of the teachers as to their level of efficiency which revealed an over-all result of "Quite A Bit" with an average weighted mean of 3.81. In the indicator "how much can you do to get students believe they can do well in school work?" garnered a weighted mean of 3.94 which means teachers believed to get satisfied described as quite a bit to their present work as to facilitating learners learning activity in school. The lowest score of 3.64 among all indicators is "how much can you assist families in helping their children do well in school?" interpreted as quite a bit. The findings would mean that teachers could no longer assist the parents of the students due to the fact of the heavy workload assigned to them. In other words, there was an ancillary work assigned to the latter. The implication of this findings is that there must be a coordination between parents and the teachers. Likewise, teachers should spare time to conduct home visitation if not to reach out the parents in other means of communication.

This further implies that close coordination and communication is indispensable. This claim is supported with the study of Demirtaú (2010) which he revealed that it is expected that a school which has teachers with high level of job satisfaction and efficiency to work gives qualified education and brings up successful students.

## CONCLUSION

Based on the findings of the study, it could be concluded that the secondary teachers in the Districts of Naval, Division of Biliran were just satisfied and quite a bit efficient of their work performance.

## RECOMMENDATIONS

School heads are encouraged to actively support, work and collaborate with teachers for the betterment and improvement of the teachers in terms of job satisfaction and efficiency of their work performance.

There should be a peer mentoring and/or counselling for the teachers. Proper and adequate technical assistance should also be provided to teachers, most especially those with low performance at school.

School heads should implement the designed Training and Development Program for teachers for the satisfaction and efficiency of teachers in their teaching job.

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## Research Article

# Investigating Relationship between Self - Concept and Attitude Towards Mathematics among Pre-service Teachers

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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

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## 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.

	(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
<i>Self-Concept</i>	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
<i>Self - Confidence</i>	3.1324	0.4712
<i>Values</i>	3.2048	0.2835
<i>Enjoyment</i>	3.1092	0.451
<i>Motivation</i>	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).

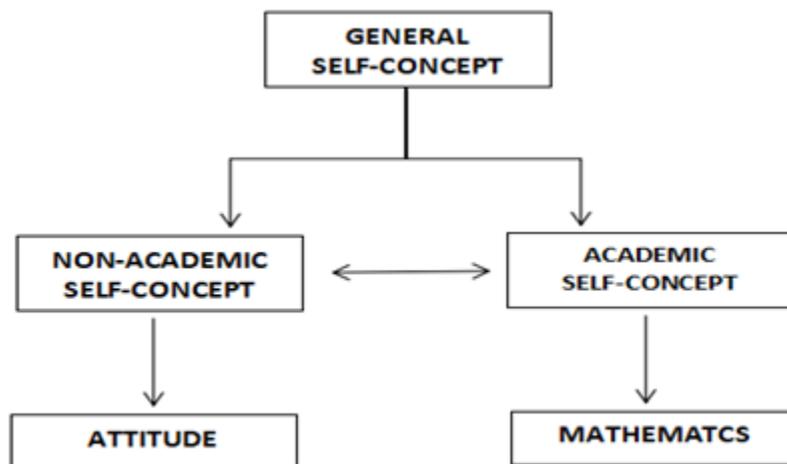


Figure 1: Academic Self-Concept and Attitude Model

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

## LITERATURE REVIEW

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.

### 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.

#### 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.

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.

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.

of Zamboanga Peninsula Polytechnic State University.

#### PARTICIPANTS OF THE STUDY

The study participants will be comprised of Pre-Service Teachers of the College of Teacher Education

#### POPULATION AND SAMPLING PROCEDURE

##### POPULATION:

##### POPULATION: PRE-SERVICE TEACHER OF CTE, ZPPSU

Courses in CTE	1st	2nd	3 <sup>rd</sup>	4 <sup>th</sup>	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	%
<b>Sex</b>		
Male	62	31
Female	138	69
<b>Age</b>		
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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