Student's Attitude and Efficacy towards Mathematics under the Alternative Learning System at Tisa Ii Elementary School

[1]Ms. Michelle Gesim, [2]Dr. Glenn R. Andrin, [3]Dr. Kevin L. Minoza, [4]Dr. Junix Salinas, [5]Dr. Mario Ramil Pepito, [6]Ms. Maria Teresa Lupian

Abstract

This study intended to determine the relationship between students' attitude and efficacy towards Mathematics under the Alternative Learning System at Tisa II Elementary School with an end-view of proposing recommendations that might address the phenomenon. This study utilized the descriptive research design using the survey technique. It is a descriptive correlational study to gather data on the attitude and efficacy towards mathematics among the students under the Alternative Learning System. Furthermore, it also made used of a documentary analysis on the Efficacy as reflected by their Grade Point Average in Mathematics. There is no significant difference in the respondents' level of attitude towards mathematics when grouped based on their sex and age. Hence, the attitudes of the respondents towards mathematics subject are perceived to be identical or in the same level across sex and age status. Furthermorehere is a significant positive relationship between the respondents' level of attitude towards mathematics in four dimensions. This implies that when the respondents' level of attitude in terms of value towards mathematics increases, their levels of attitude in terms of motivation, enjoyment, and self-confidence towards mathematics will also increase, and vice versa. In other words, the respondents' level of attitude in terms of value towards mathematics positively affects their self-confidence and enjoyment towards mathematics as well as how they become motivated in learning the subject.

Keywords: *Attitude, Efficacy, Alternative Learning System, Anova, Cebu City, Philippines*

Rationale

One subject that is present at every age and in every situation is mathematics. Its importance extends outside of the classroom and the institution. Therefore, it is essential that students understand mathematics thoroughly and in depth (Department of Education, 2013). A crucial component of today's youth education is mathematics. Due of how much it affects people's daily lives all across the world, it is of utmost importance. It forms the foundation for contemporary technologies, scientific advancements, and research projects. It can also be used as a technique to address issues that arise in daily life.

As a result, math has come to be regarded as one of the most important allied courses in a secondary school curriculum. The high school curriculum's relationship between algebra, geometry, and trigonometry is a crucial subject. The foundational phase of higher education also requires the study of mathematics at the secondary level. The study of mathematics should be a required subject for all secondary school students. But it's typical to have a bad attitude about math. Mathematics has a serious image issue, which has been anecdotally

labeled as "Mathemaphobia" (Chukus 2012; Blackweir, 2016) or from a phenomenological perspective as "disaffection" (Blackweir, 2016).

Significant variances can be discovered between classes as well as between students in the same mathematics class because attitudes toward mathematics depend on the experiences of specific pupils. Additionally, one of the aspects in learning mathematics is students' attitudes toward the subject. According to Mogensen's (2011) study, experiences cause changes in the brain, which implies that motivation should be affected and taken seriously when a school's culture encourages students to maintain low profiles in order to avoid being stigmatized. Student views regarding the subject are strongly influenced by self-assurance and positive role models among peers and teachers. As a result, one of the elements influencing how well pupils learn mathematics is their philosophy regarding the subject.

The student's opinions regarding the topic are closely tied to their self-efficacy in mathematics. Self-efficacy, according to Bandura (1997), is connected to an individual's assessment of their ability to organize and carry out actions to accomplish particular goals. Self-efficacy is assessed based on how confident a person is in their ability to do a given activity. It is task-specific, referring to how an individual perceives the degree of difficulty for a particular task.

Self-efficacy, according to Bandura (1981), is the most accurate way to gauge the degree of success of a certain action since it focuses on that particular action each time. Low performance in mathematics is a concern in the Philippines as well since attitudes and self-efficacy in mathematics influence performance. For instance, the Philippines (TIMSS) was placed 39th out of 41 participating foreign nations in the Third International Mathematics and Science Study.

This showed that Filipino students could not go beyond simple recall. They could not fully comprehend the questions, thus leading to a wrong answer. Mathematics performance, as measured by the National Achievement Test (NAT) result, is below the 50% required by DepEd. In 2009, even with only the science high schools participating in the Advanced Mathematics category, the Philippines ranked lowest (Department of Education, 2010).

The researcher worked in the Department of Education Cebu City Division for 8 years as a secondary school teacher and assessed the mathematics performance and potential of students and found out that most students experienced difficulty in Mathematics. Most of them do not perform the task given by the teacher. In quizzes, students got very low scores. When performing their seat works, some of the students have only a few passed the examination, and most of them would take the remedial intervention to pass the subject.

Moreover, the researcher observed that attitude and self-efficacy are the factors in teaching mathematics to secondary students. Several studies revealed that positive attitudes are conducive to good achievement in mathematics. Furthermore, regarding school mathematics, self-efficacy is found to be one of the most critical variables for explaining the difference in the mathematics performance of students, which explains a quarter of the variance while predicting students' mathematics achievement (Recbar et al., 2018). It is, therefore, essential to understanding the students' attitudes and self-efficacy and their relationship to their

mathematics performance. The researcher believed that knowing the students' attitudes and self-efficacy and the relationships among these variables will help the teachers to have a strong basis in building their students' attitudes and self-efficacy alleviating their mathematics math performance.

Theoretical Background

The study is anchored on the cognitive theory of psychopathology of Beck (2011). He developed a comprehensive theoretical model called the cognitive model. This model describes how people's thoughts and perceptions influence their lives. It explains individuals' emotional, physiological, and behavioral responses as mediated by their perceptions of experience, which are influenced by their beliefs and distinct ways of interacting with the world and their experience.

The cognitive model in this study includes the students' attitudes toward mathematics as well as their mathematical self-efficacy and how it affects their performance.Students' attitude towards mathematics and mathematics self-efficacy describes how students' thoughts and perceptions influence their mathematics learning. Nicolidau and Philippou (2008; Repuya, 2018) stressed that thoughts or the attitude of the students towards mathematics start in the early years of schooling. They emphasized that the teachers in high school have the opportunity and responsibility to promote and even enhance a positive attitude towards mathematics. They further explained that fostering a positive attitude towards mathematics to students can influence their mathematics performance.

THE PROBLEM

Statement of the Problem

This study intended to determine the relationship between students' attitude and efficacy towards Mathematics under the Alternative Learning System at Tisa II Elementary School with an end-view of proposing recommendations that might address the phenomenon.

Specifically, it seeks to answer the following queries:

1. What is the profile of the respondents in terms of:
    1.1 age;
    1.2 sex; and
    1.3 Civil status?
2. What is the level of attitude towards Mathematics among the respondents in the context of :
    2.1 value;
    2.2 enjoyment;
    2.3 self, confidence; and
    2.4 Motivation?
3. What is the level of students' efficacy towards Mathematics as reflected in their Grade Point Average?
4. Is there a significant degree of relationship between respondents' profile and level of attitude towards Mathematics?

5. Is there a significant degree of correlation between level of Attitude and Efficacy towards Mathematics?

6. Is there a significant degree of variance on the four dimensions of Attitude towards Mathematics ?

7. Based on the findings, what recommendations maybe made?

Hypothesis

This study will be postulated under the following null hypothesis which will be tested at .05 level of significance.

Ho1: There is no significant degree of relationship between respondents' profile and level of attitude towards Mathematics.

Ho2: There is no significant degree of correlation between level of Attitude and Efficacy towards Mathematics.

Ho3: There is no significant degree of variance on the four dimensions of Attitude towards Mathematics.

RESEARCH METHODOLOGY

Design

This study utilized the descriptive research design using the survey technique. It is a descriptive correlational study to gather data on the attitude and efficacy towards mathematics among the students under the Alternative Learning System. Furthermore, it also made used of a documentary analysis on the Efficacy as reflected by their Grade Point Average in Mathematics.

Environment

This study will be conducted at TISA II ELEMENTARY SCHOOL which is one of the public elementary schools in the Division of Cebu City; particularly in South District 5.It is located along F. Llamas Street, Tisa, Cebu City. It is more or less five hundred meters(500) away from the barangay hall. It is surrounded with residential houses but at back portion of the school lies an urban poor area. The school started its operations in the year 1972 after having been officially separated from Tisa I Elementary School. Due to growth of the population of barangay Tisa, the school was split into two. Tisa I and Tisa II Elementary Schools. It was well managed by different school administrators assigned and later established a name as one of the effective schools in the Division of Cebu City. Later, Tisa I became Tisa Day High School catering only to high school students and Tisa II Elementary School catering elementary pupils

Respondents

This study utilized the purposive- universal sampling technique in choosing its respondents wherein only students enrolled in the Alternative Learning System of Tisa II Elementary School were considered as its sample size. Furthermore, Universal sampling since all the 74 students were asked to take part of this study.

Instrument

This study will utilize a standardized tool on Attitude towards Mathematics by Peteros (2019). The said tool is made up questions for demographic profile such as age, sex, and civil status while the second section contains the four dimensions of Attitude towards Mathematics such as Value, Motivation, Enjoyment and Self-confidence which has a four likert scale (4- Strongly Agree, 3-Moderately Agree, 2-Agree, 1-Disagree).

In-order to establish the degree of attitude, a verbal interpretation is made such as (4-Very Highly Positive, 3-Very Positive, 2-Positive, 1- Negative)

Data Gathering Procedures:

Preliminary: The Researcher will write a letter asking permission to conduct the study to the ALS Focal Person of Cebu City. Once permission will be granted, she will then proceed to the data gathering procedures.

Gathering Phase: The researcher will then distribute the prepared questionnaire to the intended respondents of the study of which she will explain items contained for a better understanding and a more accurate responses from the respondents of the study.

Retrieval Phase: The researcher will allot 20 minutes in answering the entire questionnaire after which, retrieval will follow.

Data Analysis

The data gathered were organized, tallied, and analyzed using Microsoft Excel and IBM SPSS Statistics Version 22. Specifically, the following statistical tools were utilized for the analysis of data:

Frequency Count and Percentage. These tools are used to describe the profile variables of the respondents in terms of sex and age.

Mean and Standard Deviation. These tools are used to give description and interpretation of the respondents' level of attitude towards mathematics in terms of value, enjoyment, motivation, and self-confidence.

T-Test and One-way ANOVA. These tools are parametric tests used to determine if significant difference exists on the respondents' level of level of attitude towards mathematics based on the variables sex and age. The normality assumption of the data was first checked and verified by the researcher (see Appendix A).

Pearson R Correlation. This tool is a parametric test used to determine if a significant relationship exists between the respondents' levels of attitude towards mathematics in terms of value, enjoyment, and motivation. Using Shapiro-Wilk test, the data were found to be normally distributed (see Appendix A-3).

Spearman Rho Correlation. This tool is a non-parametric test used to determine if a significant relationship exists between the respondents' levels of attitude towards mathematics in terms of self-confidence, value, enjoyment, and motivation. Using Shapiro-Wilk test, the data in self-confidence were found to be not normally distributed (see Appendix A-3) and so, this non-parametric test was employed.

DISCUSSIONS AND FINDINGS

This chapter presents the findings and interpretation of the data gathered from this study based from the formulated objectives.

Table 1. *Demographic Profile of the Respondents*

Variables	Frequency (n=74)	Percentage (%)
Sex		
Male	36	48.65
Female	38	51.35
Age		
15-20 years old	53	71.62
21-25 years old	10	13.51
26 years old and above	11	14.87

As can be seen in Table 1, there were 36 or 48. 65 % male respondents while 38 were female respondents. A closer would reveal that dismal majority of the respondents were females. As for the age distribution, the table reveals that a great majority came from the 15-20 age bracket considered as young adolescent.

Table 2

Level of Attitude towards Mathematics in the Context of Value

Indicators	Mean	SD	Verbal Description	Qualitative Description
Value				
1. Mathematics is an essential and necessary subject.	2.71	1.13	Moderately Agree	High
2. I want to develop my mathematical skills.	3.14	1.08	Moderately Agree	High
3. Mathematics helps develop the mind and critical thinking.	3.05	0.95	Moderately Agree	High
4. Mathematics is essential in everyday life.	2.66	1.04	Moderately Agree	High
5. Mathematics is a standout among the most critical subjects for individuals to examine.	2.74	1.07	Moderately Agree	High
6. Secondary school math subjects would be useful regardless of what I choose to examine.	2.64	0.88	Moderately Agree	High
7. I consider numerous ways that I use math outside of school.	2.64	1.00	Moderately Agree	High
8. I think studying advanced mathematics is useful.	2.74	0.97	Moderately Agree	High
9. I think considering math encourages me with critical thinking in different zones.	2.54	1.01	Moderately Agree	High
10. A solid Math foundation could help me in my expert life.	2.73	0.96	Moderately Agree	High
Sub-Mean	**2.76**	**1.02**	**Moderately Agree**	**High**

Legend:

Parameter	Verbal Interpretation	Qualitative Description
3.50 – 4.00	Strongly Agree	Very High
2.50 – 3.49	Moderately Agree	High
1.75 – 2.49	Slightly Agree	Low
1.00 – 1.74	Disagree	Very Low

As revealed in the above table, an aggregated mean of 2.76 was generated with an interpretation of High. A closer look at the data shows would reveal that majority of the respondents' attitude towards Mathematics viewed that the subject developed their mathematical skills. On the other hand, the same respondents' least viewed and considered math to have encouraged them with critical thinking in different zones.

The result of this study support the studies of Nicolidau and Philippou (2008), Klomegah (2007), and Smith et al. (2006) all agreed that math performance is affected by the behavior of the learner towards mathematics. Hoffman and Schraw (2006), Fast et al. (2010), and Liu and Koiala (2009) are all in consensus as well that math self efficacy is a strong predictor of mathematics performance. Phillips (2015) and Cadorna et al. (2016) both agreed that teachers could do a lot in helping the students overcome their fear of the subject.

Table 3

Level of Attitude towards Mathematics in the Context of Enjoyment

Enjoyment				
1. I get much fulfillment out of taking care of a math issue.	2.61	0.96	Moderately Agree	High
2. I have for the most part delighted in examining math in school.	2.65	0.90	Moderately Agree	High
3. Mathematics is exciting and fun.	2.68	1.04	Moderately Agree	High
4. I like to tackle new issues in math.	2.47	0.92	Slightly Agree	Low
5. I want to complete task in math than to compose an article.	2.72	1.04	Moderately Agree	High
6. I like math.	2.50	1.01	Moderately Agree	High
7. I am happier during my class in math than in any other class.	2.31	1.03	Slightly Agree	Low
8. Math is a fascinating subject.	2.41	1.01	Slightly Agree	Low
9. I am open to communicating my very own thoughts on the most proficient method to search for answers for a troublesome issue in math.	2.57	0.94	Moderately Agree	High
10. I am comfortable answering questions in math.	2.32	1.02	Slightly Agree	Low
Sub-Mean	**2.52**	**0.99**	**Moderately Agree**	**High**

Looking closely at the table, it shows that the indicator "I want to complete task in math than to compose an article" got the highest mean of 2.72 (High) with a standard deviation of 1.04.Also, the table shows that the indicator "I am happier during my class in math than in any other class" got the lowest mean of 2.31 (Low) with a standard deviation of 1.03

The statistics collected confirm Ololube's study, which identified motivating variables as those that encourage employees to work more. These aspects, which he categorised as achievement, recognition, work itself, responsibility, and progress, are thought to be related to the employment situation. Achievement means

overcoming obstacles and attaining the highest standards. According to Ololube (2005), motivation comes from a person's need for professional development, personal growth, increasing responsibility, and the work itself. One may infer from both views that need satisfiers ought to be offered to encourage teachers. Applying job-satisfying aspects is essential in the field of education as a result of teachers' ability to foster a positive social, psychological, and physical environment in the classroom when their needs are met.

Table 4

Level of Attitude towards Mathematics in the Context of Motivation

Motivation				
1. I am sure that I could learn propelled mathematics.	2.41	0.98	Slightly Agree	Low
2. I don't want to abstain from utilizing Arithmetic in school.	2.18	1.03	Slightly Agree	Low
3. I will take more than the required measure of mathematics.	2.34	1.00	Slightly Agree	Low
4. I intend to take as much as math as I can amid my busy schedules.	2.11	0.90	Slightly Agree	Low
5. The challenge of math appeals to me.	2.51	1.05	Moderately Agree	High
Sub-Mean	**2.31**	**1.00**	**Slightly Agree**	**Low**

The table shows that the indicator "The challenge of math appeals to me" got the highest mean of 2.51 (High) with a standard deviation of 1.05.On the other hand, it shows that the indicator "I intend to take as much as math as I can amid my busy schedules" got the lowest mean of 2.11 (Low) with a standard deviation of 0.90.The data seems to be agreeing on the work of Herzberg and develops a human resources approach to motivation. This theory first classifies managers in to one of two groups that is Theory X and Theory Y based on extreme assumptions about people and work. Theory X manager assumes that average employees dislike work, and that the only way to maintain or increase productivity is to simplify the operational process, supervise the employees closely, and motivate them in short term through financial incentive schemes. So, under the Theory X approach, the manager's role is to focus on the hygiene's and to control and direct employees; it assumes that employees are mainly concerned about safety. Theory Y manager assumes that average employee's desire self-direction and self-control, seek and accept responsibility, enjoy physical and mental effort, and have the potential to be self-motivating. In connection to this, Shank (2009) stated that Theory Y managers focus on Herzberg's motivators and work to assist employees in achieving these higher levels.

Table 5

Level of Attitude towards Mathematics in the Context of Self-Confidence

Self-Confidence				
1. Mathematics is a standout among my most favorite subjects.	2.42	1.11	Slightly Agree	Low
2. Studying mathematics makes me feel good.	2.41	1.01	Slightly Agree	Low

3. Mathematics makes me feel comfortable.	2.24	1.07	Slightly Agree	Low
4. When I hear the word mathematics, I feel so happy.	2.14	1.05	Slightly Agree	Low
5. Mathematics does not scare me at all.	2.11	1.00	Slightly Agree	Low
6. I learn mathematics easily.	2.04	1.03	Slightly Agree	Low
7. I trust that I am great at taking care of math issues.	2.20	0.94	Slightly Agree	Low
8. I have an insatiable feeling towards mathematics.	2.12	1.01	Slightly Agree	Low
9. I am constantly excited about my math class.	2.20	0.99	Slightly Agree	Low
10. I am ready anytime to take care of math issues without much trouble.	2.26	1.07	Slightly Agree	Low
Sub-Mean	**2.21**	**1.03**	**Slightly Agree**	**Low**

Table 5 shows that the indicator "Mathematics is a standout among my most favorite subjects" got the highest mean of 2.42 (Low) with a standard deviation of 1.11.On the other hand, it shows that the indicator "I learn mathematics easily" got the lowest mean of 2.04 (Low) with a standard deviation of 1.03.

Data agrees to on Mc Clelland's theory which studies the three needs that motivation human behavior such as power, affiliation and achievement. The teachers should be encouraged to work hard, to bring high performance. To ensure the effectiveness of teacher's performance, there are different theories of motivation used in order to motivate teachers at work place. There is no single theory and one best theory to motivate teachers to accomplish their jobs effectively. The organization or the manager expected to use a combination of two or more application of theories of motivation. Different authors express different theories of motivation differently in different times (Bonsa, 1996).

Table 5

Significant difference of the respondents' level of attitude towards mathematics when grouped based on their profile

Variables	t-value	F-value	p-value	Decision	Interpretation
Sex	-0.808		0.422	Do not reject HO1	Not Significant
Age		1.473	0.236	Do not reject HO1	Not Significant

The table shows that the respondents' level of attitude towards mathematics when grouped by sex got a computed t-value of -8.08 and a p-value 0.422. Since the p-value of 0.422 is significantly higher than 0.05, this means that the null hypothesis was accepted. It implies that the respondents' level of attitude towards mathematics do not differ each other when grouped by its sex. Also, the table shows that the respondents' level of attitude towards mathematics when grouped by age got a computed F-value of 1.473 and a p-value 0.236. Since the p-value of 0.422 is significantly higher than 0.05, this means that the null hypothesis was accepted. It implies that the respondents' level of attitude towards mathematics do not differ each other when grouped by its age.

Bandura hypothesized that this belief is domain-specific, which means it cannot be expected that a person is self-efficacious in all human endeavors (Bandura, 1997). Mathematics self-efficacy is the belief in one's ability to learn and succeed in school mathematics. A student's conviction that adopting certain behaviors will result in achievement in the mathematics classroom; however, the student defines it. This belief was shown to predict mathematics performance better than any other mathematics-related belief constructs (Liu, 2009). Other factors, apart from self-efficacy can guide and motivate students. When students do not believe in their ability to succeed in each task, they need to have much higher selfcontrol and motivation to achieve. Unfortunately, students who have low self-efficacy are less likely to regulate their achievement behaviors or be motivated to engage in learning (Klassen and Usher, 2010; Schunk and Pajares, 2009). Self-efficacy is not merely a reflection of past achievements (Bandura, 1997). There are capable students with low and high self-efficacies, and there are less capable ones with varying levels of this belief (Caupasin, 2012).

Table 6

Significant relationship between the four dimensions of the respondents' level of attitude towards mathematics.

Variables	Correlation Coefficient	p-value	Decision	Interpretation
Value vs Enjoyment	0.591	0.0001	Reject HO2	Significant
Value vs Motivation	0.565	0.0001	Reject HO2	Significant
Enjoyment vs Motivation	0.797	0.0001	Reject HO2	Significant
Self-Confidence vs Value	0.518	0.0001	Reject HO2	Significant
Self-Confidence vs Enjoyment	0.765	0.0001	Reject HO2	Significant
Self-Confidence vs Motivation	0.790	0.0001	Reject HO2	Significant

The table shows that the respondents' attitude as to value when paired by enjoyment got a correlation coefficient of 0.591 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between value and enjoyment.

Also, it shows that the respondents' attitude as to value when paired by motivation got a correlation coefficient of 0.565 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between value and motivation.

Further, the table shows that the respondents' attitude as to enjoyment when paired by motivation got a correlation coefficient of 0.797 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between enjoyment and motivation.

Moreover, the table reveals that the respondents' attitude as to self-confidence when paired by value got a correlation coefficient of 0.518 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between self-confidence and value. Also, Table 6 shows that the respondents' attitude as to self-confidence when paired by enjoyment got a correlation coefficient of 0.765 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between self-confidence and enjoyment.

Further more, the table shows that the respondents' attitude as to self-confidence when paired by motivation got a correlation coefficient of 0.790 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between self-confidence and motivation.

Elaboration Likelihood Theory of Attitude Change: This theory of persuasion suggests that people can alter their attitudes in two ways. First, they can be motivated to listen and think about the message, leading to an attitude shift. Or, they might be influenced by the characteristics of the speaker, leading to a temporary or surface shift in attitude. Messages that are thought-provoking and that appeal to logic are more likely to lead to permanent changes in attitudes.

Findings

Based form the data gathered, the following findings are then offered:

1. There were 36 or 48. 65 % male respondents while 38 were female respondents. A closer would reveal that dismal majority of the respondents were females. As for the age distribution, the table reveals that a great majority came from the 15-20 age bracket considered as young adolescent.
2. The respondents' level of attitude towards mathematics when grouped by sex got a computed t-value of -8.08 and a p-value 0.422. Since the p-value of 0.422 is significantly higher than 0.05, this means that the null hypothesis was accepted. It implies that the respondents' level of attitude towards mathematics do not differ each other when grouped by its sex. Also, the table shows that the respondents' level of attitude towards mathematics when grouped by age got a computed F-value of 1.473 and a p-value 0.236. Since the p-value of 0.422 is significantly higher than 0.05, this means that the null hypothesis was accepted. It implies that the respondents' level of attitude towards mathematics do not differ each other when grouped by its age.
3. A correlation coefficient of 0.591 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between value and enjoyment. Also, it shows that the respondents' attitude as to value when paired by motivation got a correlation coefficient of 0.565 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between value and motivation.

Further, the table shows that the respondents' attitude as to enjoyment when paired by motivation got a correlation coefficient of 0.797 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between enjoyment and motivation. Moreover, the table reveals that the respondents' attitude as to self-confidence when paired by value got a correlation coefficient of 0.518 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between self-confidence and value. Also, Table 6 shows that the respondents' attitude as to self-confidence when paired by enjoyment got a correlation coefficient of 0.765 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between self-confidence and enjoyment. Further more, the table shows that the respondents' attitude as to self-confidence when paired by motivation got a correlation coefficient of 0.790 and p-value of 0.0001 which is significantly lesser than 0.05. This leads to the rejection of its null hypothesis that there is no significant relationship between self-confidence and motivation.

Conclusions

Based from the foregoing findings, the following conclusions are hereby made:

There is no significant difference in the respondents' level of attitude towards mathematics when grouped based on their sex and age. Hence, the attitudes of the respondents towards mathematics subject are perceived to be identical or in the same level across sex and age status. Furthermorehere is a significant positive relationship between the respondents' level of attitude towards mathematics in four dimensions. This implies that when the respondents' level of attitude in terms of value towards mathematics increases, their levels of attitude in terms of motivation, enjoyment, and self-confidence towards mathematics will also increase, and vice versa. In other words, the respondents' level of attitude in terms of value towards mathematics positively affects their self-confidence and enjoyment towards mathematics as well as how they become motivated in learning the subject

References

[1] Akey, T. M. (2006). School context, student attitudes and behavior, and academic achievement: An exploratory analysis. MDRC.

[2] AOlusegun, S. (2015). Constructivism learning theory: A paradigm for teaching and learning. Journal of Research & Method in Education, 5(6), 66-70.

[3] Bereiter, C. (2005). Education and mind in the knowledge age. Routledge.

[4] Bramlett, D. C. (2007). A study of African-American college students' attitudes towards mathematics.

[5] Chang, K. E., Wu, L. J., Weng, S. E., & Sung, Y. T. (2012). Embedding game-based problem-solving phase into problem-posing system for mathematics learning. Computers & Education, 58(2), 775-786.

[6] Clark, R. E. (2009). How much and what type of guidance is optimal for learning from instruction. Constructivist instruction: Success or failure, 158-183.

[7] Cohen, J., McCabe, L., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. Teachers college record, 111(1), 180-213.

[8] Diaz, E. D., & Dio, R. V. (2017). Effectiveness of Tri-In-1 strategic intervention materials for Grade 9 students through Solomon Four-Group Design. Asia Pacific Journal of Education, Arts and Sciences, 4(1), 79-86.

[9] Farooq, M. S., & Shah, S. Z. U. (2008). Students' attitudes towards mathematics. Pakistan Economic and Social Review,

[10] Field, A. P. (2006). Is conditioning a useful framework for understanding the development and treatment of phobias? Clinical Psychology Review, 26(7), 857-875.

[11] Georgiou, S. N., Stavrinides, P., & Kalavana, T. (2007). Is Victor better than Victoria at maths? Educational Psychology in Practice, 23(4), 329-342.

[12] Germann, P. J. (1988). Development of the attitude toward science in school assessment and its use to investigate the relationship between science achievement and attitude toward science in school. Journal of research in science teaching, 25(8), 689-703.

[13] Goos, M., Galbraith, P., & Renshaw, P. (2004). Establishing a community of practice in a secondary mathematics classroom. Mathematics education: Exploring the culture of learning, 91-116. Retrieved from http://bit.ly/2DhlX8c

[14] Gushue, G. V., Scanlan, K. R., Pantzer, K. M., & Clarke, C. P. (2006). The relationship of career decisionmaking self-efficacy, vocational identity, and career exploration behavior in African American high school students. Journal of Career Development, 33(1), 19-28. https://doi.org/10.1177/0894845305283004

[15] Hatch, J. A. (2010). Rethinking the relationship between learning and development: Teaching for learning in early childhood classrooms. The Educational Forum, 74(3), 258-268. https://doi.org/10.1080/00131725.2010.483911

[16] Ifamuyiwa, S. A., & Akinsola, M. K. (2008). Improving senior secondary school students' attitude towards mathematics through self and cooperative-instructional strategies. International journal of mathematical education in science and technology, 39(5), 569-585. https://doi.org/10.1080/00207390801986874

[17] Johnston, M. (2016). What more can we learn from early learning theory? The contemporary relevance for behaviour change interventions. British Journal of Health Psychology. https://doi.org/10.1111/bjhp.12165

[18] Kara, A. (2009). The effect of a learning theories unit on students' attitudes toward learning. Australian Journal of Teacher Education, 34(3), 5. https://doi.org/10.14221/ajte.2009v34n3.5 Keller, K. L. (2012). Understanding the richness of brand relationships: Research dialogue on brands as intentional agents. Journal of Consumer Psychology, 22(2), 186-190.

[19] Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. Journal of School Health, 74(7), 262-273. https://doi.org/10.1111/j.1746- 1561.2004.tb08283.x

[20] Köğce, D., Yıldız, C., Aydın, M., & Altındağ, R. (2009). Examining elementary school students' attitudes towards mathematics in terms of some variables. Procedia-Social and Behavioral Sciences, 1(1), 291- 295. https://doi.org/10.1016/j.sbspro.2009.01.053

[21] Larsen, J. (2013). Attitude in mathematics: A thematic literature review. British Columbia: Simon Fraser University. Retrieved from http://bit.ly/2IsLFL4

[22] Lau, P. N. K., Singh, P., & Hwa, T. Y. (2009). Constructing mathematics in an interactive classroom context. Educational Studies in Mathematics, 72(3), 307-324. https://doi.org/10.1007/s10649-009-9196-y

[23] Ma, X., & Xu, J. (2004). Determining the causal ordering between attitude toward mathematics and achievement in mathematics. American journal of education, 110(3), 256-280. https://doi.org/10.1086/383074

[24] Maio, G. R., Haddock, G., & Verplanken, B. (2018). The psychology of attitudes and attitude change. Sage Publications Limited

[25] Marsick, V. J., & Watkins, K. E. (2001). Informal and incidental learning. New Directions for Adult and Continuing Education, 2001(89), 25-34. https://doi.org/10.1002/ace.5

[26] Mensah, J.K., Okyere, M., & Kuracnchie, A. (2013). Student attitude towards mathematics and performance: Does the teacher attitude matter. Journal of Education and Practice, 4(3), 132-133. Retrieved from http://bit.ly/2KL8BXU Mohamed, L., & Waheed, H. (2011). Secondary students' attitude towards mathematics in a selected school of Maldives. International Journal of humanities and social science, 1(15), 277-281. Retrieved from http://bit.ly/2VU1IVA

[27] Mohd, N., Mahmood, T. F. P. T., & Ismail, M. N. (2011). Factors that influence students in mathematics achievement. International Journal of Academic Research, 3(3), 49-54. Retrieved from http://bit.ly/2VQw0Z3

[28] Montano, D. E., & Kasprzyk, D. (2015). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. Health Behavior: Theory, Research, and Practice, 95-124. Retrieved from http://bit.ly/2Vdaoce

[29] Nicolaidou, M., & Philippou, G. (2003). Attitudes towards mathematics, self-efficacy, and achievement in problem-solving. European Research in Mathematics Education III. Pisa: University of Pisa, 1-11. Retrieved from http://bit.ly/2IG6RwG

[30] Paavola, S., & Hakkarainen, K. (2005). The knowledge creation metaphor: An emergent epistemological approach to learning. Science & Education, 14(6), 535-557. https://doi.org/10.1007/s11191-004-5157-0 Petty, R. E. (2018). Attitudes and persuasion: Classic and contemporary approaches. Routledge. https://doi.org/10.4324/9780429502156

[31] Saritas, T., & Akdemir, O. (2009). Identifying factors affecting the mathematics achievement of students for better instructional design. International Journal of Instructional Technology and distance learning, 6(12), 21-36. Retrieved from http://bit.ly/2KNXXQh

[32] Schenkel, B. D. (2009). The impact of an attitude toward mathematics on mathematics performance (Doctoral dissertation, Marietta College). Retrieved from http://bit.ly/2KMSw4a Sheldon, B. (2011). Cognitive-behavioural therapy: Research and practice in health and social care. Routledge. https://doi.org/10.4324/9780203833711

[33] Singh, K., Granville, M., & Dika, S. (2002). Mathematics and science achievement: Effects of motivation, interest, and academic engagement. The Journal of Educational Research, 95(6), 323-332. https://doi.org/10.1080/00220670209596607 Sorensen, V. (2006). Motivating middle school mathematics students. Retrieved from http://bit.ly/2UGDQbf

[34] Stone III, J. R., Alfeld, C., & Pearson, D. (2008). Rigor and relevance: Enhancing high school students' math skills through career and technical education. American Educational Research Journal, 45(3), 767-795. https://doi.org/10.3102/0002831208317460

[35] Tapia, M., & Marsh, G. E. (2004). An instrument to measure mathematics attitudes. Academic Exchange Quarterly, 8(2), 16-22. Retrieved from http://bit.ly/2v81vCh

[36] Taylor, G. R., & MacKenney, L. (2008). Improving human learning in the classroom: Theories and teaching practices. R&L Education. Retrieved from http://bit.ly/2ICeOTq

[37] Tezer, M., & Karasel, N. (2010). Attitudes of primary school 2nd and 3rd-grade students towards mathematics course. Procedia-Social and Behavioral Sciences, 2(2), 5808-5812. https://doi.org/10.1016/j.sbspro.2010.03.947

[38] Wang, H. (2014). On the constructivist teaching of extensive reading for English majors. International Journal of Social, Education, Economics and Management Engineering, 3, 780-782. Retrieved from http://bit.ly/2UO28jS

[39] Zakaria, E., Chin, L. C., & Daud, M. Y. (2010). The effects of cooperative learning on students' mathematics achievement and attitude towards mathematics. Journal of social sciences, 6(2), 272-275. https://doi.org/10.3844/jssp.2010.272.275

[40] Zan, R., & Di Martino, P. (2007). Attitude toward mathematics: Overcoming the positive/negative dichotomy. The Montana Mathematics Enthusiast, 3, 157-168.