



Attitude of Pre- Tertiary Technical and Vocational Students Towards Mathematics in Ghana: Kpando Municipality in Focus

FRIMPONG ATTA SAMSFORD

Department of Mathematics
St Monica's Senior High School
P. O Box 17, Ashanti Mampong, Ghana

ABSTRACT

The high level of the poor achievement in mathematics amongst the pre-tertiary school students has become a public phenomenon and daily issue in the educational and academic arenas of the country; this has made the academia and friends of mathematics education restless and unmute about the situation. The purpose of this study was to assess students' attitudes in mathematics at pre-tertiary Technical Vocational Education Training (TVET) schools in the Kpando Municipality. The paradigm of this research was based on the positivist research philosophy. The work employed a descriptive survey procedure that used questionnaires. Quantitative data were taken from mathematics teachers and third year students in the two TVET Institutes in the Kpando Municipality. Using mean and standard deviation, the data from a sample of 262 students and 14 mathematics teachers were analyzed with a 95% confidence interval and a five percent (5%) margin of error. The results revealed that, majority of pupils in TVET schools identified mathematics to be one of the more challenging academic disciplines. Moreover, most of the respondents responded that application of mathematical games in teaching Mathematics could help improve the situation. It is recommended that Government institutions, scholars, academia, and other stakeholders should consider the results of the current study when making decisions on students' attitude and performance in Mathematics in the study area and the nation as a whole.

Key words: Attitude , Students , Kpando Municipality, Mathematics, TVET

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I. Background to the study

Almost all aspects of the human development basically depend on effective notion and wisdom of math and science, there cannot be any meaningful advancement in this world and in human life without the best knowledge of mathematics, (MOE, 2010). Mathematics is most important for daily life that forms a critical role in Ghanaian schools and the world as a whole. Despite the significance of mathematics in everyday life, mathematics performance among students in Ghana has been unpleasant over the years. It's very important in the life of technical and vocational students and artisans' life since all their works deal measurement dimension settings. Smith (2004) posits that training in mathematics is a discipline to the mind and hence develops logical and critical reasoning or thinking and enhances problem solving skills in a high thinking process. Being it fashion designing, building construction, textile designing, hospitality management, and mathematics is not left out in their daily activities both in school and after school.

Mathematics as a subject in Ghana is prior component of the educational system. Cockcroft (1982) emphasized that there should be the need for all children to study mathematics in school. Cockcroft continued by stating that the majority of people view studying mathematics and English as being essential, since people must study the vocabulary of mathematics and as a matter of facts mathematics serves as a basic requirement for entry into the tertiary schools (Mbugua, Kibet, Muthaa and Nkonke, 2012) in Ghana education and must be taken serious by students in the second cycle institutions. As a matter of fact, mathematics is a key subject among the most recognized essential subjects without which one cannot gain admission into the tertiary education sector for higher education, such as the Nurses Training College, College of Education, the Technical and the Traditional Universities in Ghana.

Upon all the priority given to mathematics in Ghana the performance has persistently been low over the last decade, this study attempts to bring out some root causes of these poor performance of mathematics in the second cycle institutions. Gavor (2014) in an interview with the Ghana News Agency challenged the stand of Ghana as the best mathematics country in Africa by the Global Technology Report Ranking in 2014, arguing that over the last decades Ghana has stalled at 50% passes or less in elective mathematics and core mathematics of all senior high schools. He continued that it is on record that, out of about 905, 102 candidates who sat for exams between 1999 and 2008 only 9.8% could obtain good qualification for tertiary studies as 90.2% failed to gain admission in that period. This trend has been a continuous phenomenon as only 28% passed in 2014 and dropped to 25% in 2015.

With the current situations in the education sector, much emphasis on the recent released provisional results of the WASSCE 2018, the state of achievements of pupils in mathematics is diminishing drastically with history, in a press released by the head of public affairs of WAEC in Ghana, madam Agnes Teye-Cudjoe, the performance of candidates in mathematics (core) was significantly improved with 63.31% passing with A1 to C6 from 38.33% in 2018. This may show a kind of improvement which is highly commended, but student's performance and views to mathematics seems not encouraging in the formal school setting especially in Technical and vocational institutes who does not even publish their results for studies. For instance, out of 52 students that sat for the 2017 NABPTEX in CYO Tech/Vocational Institute only 8 students had a pass mark in mathematics.

That is, mathematics has over the years not received many improvements in the performance of students, hence, affecting the number of students who would have had access to tertiary education. Ghanaians are concerned about the poor performance of mathematics because it is thought to be a key to understanding other courses and languages (Hafiz and Hina, 2016). What have been causing the trending low prospects of mathematics grades by students? Could it be that the students do not have sufficient background in mathematical proficiency? As Barnet, (1934) established that the absence of native mathematics skills also leads to failure of mathematics. In current days, students are not able to link the everyday concept to mathematics in their various societies to the science concept being taught in the classroom sectors. The knowledge of mathematics is a fundamental knowledge, (Hafiz and Hina, 2014), it is not poorly taught as said by Hafiz and Hina, since the qualification for teachers in mathematics in the second cycle schools of Ghana is a first degree in mathematics by specialization, that is, professional mathematics teachers with mathematical education or education background yet it faces the challenge of low achievements.

Statement of Problem

The motivation for this study is from the teaching experience the researcher had in the Technical and Vocational school in the Kpando Municipality. In the archives of the C.Y.O Tech/Voc. Institute of Sovie in the Kpando Municipality, the proportion of students passing in the NABPTEX mathematics examination keeps on reducing year after year. Table 1 shows the NABPTEX Results Analysis of the CYO TECH/VOC. INST. of the Kpando Municipality.

Table 1. NAPTEX Mathematics Examination Results Analysis for C.Y.O TECH/VOC. INST.

Year	Total Candidates	Distinction-Pass	Percentage	Failure	Percentage
2015	38	37	97.37	1	2.63
2016	33	13	39.39	20	60.61
2017	49	9	18.37	40	81.83
2018	59	7	11.86	52	88.14

Source: C.Y.O TECH/VOC. INSTITUTE, 2018.

In their archives, pass rates of 97.37%, 39.39%, 18.37% and 11.86% were recorded for 2015, 2016, 2017 and 2018 academic year respectfully. As a mathematics educator and instructor, I identified that most technical and vocational students perform poorly in both internal and external exams, giving few the privilege to enter into post-secondary schools to continue their academic carrier. It was observed that lies attention was paid to the generics course especially mathematics. According to Amedorme & Fiafge (2013), Prior to extending offers to technicians for HND programs in Ghana, certain polytechnic institutes started requiring credit scores in English and mathematics.

The high level of the poor achievement in mathematics amongst the pre-tertiary school students has become a public phenomenon and daily issue in the educational and academia arenas of the country, this has made the academia and friends of mathematics education restless and unmute about the situation (Fokuo, Lassong, & Kwasi 2022). With much emphasis given to the importance of mathematics as a compulsory in the various levels of education especially in the basic and second cycle levels, performance in mathematics is still

on the low frequency. This problem is overwhelming as the percentage of students from the pre-tertiary Technical and Vocational Institutes who do not gain tertiary admissions into Technical Universities keeps on increasing drastically over the years.

It is as a result of this that this study is carried on to expose the attitude of both teachers and learners in the study area towards teaching and learning of mathematics so that informed decision could be made to help increase the pass rate in mathematics in the study area.

Objectives of the Study

1. To examine students' attitudes towards mathematics in TVET schools in Kpando Municipality
2. To examine what TVET mathematics teachers think can be done to improve on the understanding of Mathematics among learners in Kpando municipality

Research Questions

1. What is students' attitude towards the learning of mathematics in pre-tertiary TVET schools in the Kpando Municipality?
2. What could be done to improve the learning of mathematics among TVET Students in Kpando municipality?

II. REVIEW OF RELATED LITERATURE

Theoretical Framework of the Study

This study is hinged on **Social Cognitive Theory by Luszczynska and Schwarzer (2015) which**

Suggests that attitudes are shaped by the social environment, including the beliefs and values of those around us. Teachers and students may bring good or negative attitudes to teaching mathematics based on their encounter with the subject and their interactions with others who teach or learn it.

Teaching and Learning in Mathematics

Math has ever been fundamental in many aspects and to many subjects, guiding our judgments in several aspects of our life. Mathematics is at the center of education, both in terms of teaching and learning. Mathematical learning aims to link education to real-world situations, motivate students to improve their abilities, prepare them for the labour force, and stand-in mathematical concepts (Ontario Ministry of Education, 2005). Much of our everyday knowledge comes from our surroundings; mathematics not only plays an important part in a variety of fields, but it also strengthens thinking and intellectual structure. In the 21st century, tutoring and studying of mathematics, is regarded vital in all the field of education and beyond. Most higher education institutions across the globe have established a requirement that students should acquire knowledge in mathematics prior to enrolling in bachelor's degree programs (Othman et al., 2012).

Despite the significance of mathematics, the majority of learners struggle with mathematical ideas and are frightened of studying it. Tambychik and Meerah (2010), most learners find it difficult to implement and integrate their mathematics knowledge and skills, and as a result, they are unable to make judgments. The researchers found that students' challenges in solving mathematical problems are as result of their inability to acquire mathematical skills, and their cognitive capacities such as remember, memorise, and perceive in learning. As they weigh up teaching and learning methodologies in arithmetic and vocational sessions applying a variety of study methods, Dalby, & Noyes (2015), the study of mathematics was seen as distinct from vocational learning by several of the students in this research but learning mathematics, became more salient, paramount, and coherent when it was linked to students' vocational development, ethics, and culture. Teachers with content mastery offered specifics in their lessons, connect math topics to other topics, and most essentially, they are able to inspire students by establishing a positive learning environment, (National Council of Teachers of Mathematics [NTCM], 2000).

According to findings by Spanneberg (2001), instructors' attitudes toward presenting information were positively affected when they were excited and confident, and as a result, they taught more successfully, signifying how well teachers lay information in their teaching in relation to their attitudes. Bruce (2007), who researched strategies to improve students' mathematical learning experiences, emphasizes the importance of conversation in the mathematical class. In order to brand mathematics lecture behave like a jungle where beliefs and ideas may be explored, nurtured, disputed, and understood, it is advised that teachers give students more and ample time to do math discussion and refrain from interfering with poke questions.

The curriculum of mathematics according to MOE (2010), is designed in line to the constructivist theory enabling the avenue and opportunity enhancing students to have a feel of mathematical concepts and situations associated in the environment and hence making students to make their own discoveries through learning. According to the MOE (2010), the key purpose of mathematics in Ghanaian school is to help future

students acquire mathematical abilities, attitudes, knowledge, and values that they will need to be successful in their chosen occupations and daily lives. Application of knowledge is rooted in the pedagogy of STEM education of which mathematics is a core component (Gomez & Albrecht, 2014). According to Rice, Barth, Guadagno, Smith, and McCallum (2013), there are three reasons why student interest in STEM is so low: students' attitudes toward STEM, students' perceptions of their STEM aptitude, and social support for the improvement of STEM skills and professions.

Student's Attitudes Towards Mathematics

According to Allport (1935), attitudes' is seen as the proclivity to respond to a particular item in either a promising or negative manner, attitude is a mental and emotional entity that characterise a person. Attitude could be more positive or negative basically on the outcome from the entity. Attitude constitutes the beliefs, importance and behaviour one puts towards the study of mathematics (Charles, 2019). According to a study of the research, students' negative sentiments are triggered by repeated failures and obstacles while dealing with mathematics-related tasks, and unfavourable attitudes can develop over time, according to the study, when students initially start school, usually they have favourable believes toward mathematics, but in the way to progress line, their modes become little positive, and in higher grade school, they commonly turn negative (Nicolaidou & Philippou, 2003), though it is an indispensable part of the school curriculum, mathematics also plays a central role in daily life and the study of other topics. The majority of students detest mathematics; nonetheless, for a diversity of reasons, including education, learner cognitive, affective, and psychomotor characteristics, subject matter, and the learning environment, this depicts their perception towards the subject. The compression to do well, overly demanding assignments, dull classes, and low or no favourable teacher attitudes are just a few of the elements that may elucidate why attitudes toward mathematics is becoming more negative as students move through the grades (Nicolaidou & Philippou, 2003).

The perceptions of students towards mathematics according to Eshun (2004) are the reaction to an area of mathematics that individual-student gains through their beliefs, then experienced but which could be changed. For the view that they learn to associate happy experiences with mathematics, learners can nurture to have a positive attitude towards it. Positive reinforcement also makes room for the progress of a favourable viewpoint toward mathematics. It is believed that students having positive mindset toward mathematics appreciate the subject, recognize its importance, and have faith in it; as a result, such people are more likely to prioritise mathematics study (Mullis, Martin, Foy, Kelly, & Fishbein, 2020). The fact that students watch teachers and how they act, particularly when it comes to mathematics, is by no means the least of the factors that influence students' views toward the subject. Students in Singapore's Grade 10 tend to be more optimistic if they feel that their teachers are supporting them more and are treating them fairly in mathematics class (Chionh & Fraser, 2009). Due to repeated failure in arithmetic and mathematics anxiety, a student may come to accept loss by believing that they will never succeed in the subject. However, a student's positive attitude toward learning mathematics can be influenced by his or her achievement (Akinsola & Olowojaiye, 2008). Expected learning experiences become challenging in classroom environments where students' views are not taken into account, and as a result, instructional activities are not carried out accurately. While engaging in teaching activities is an indicator of a student's academic performance. Knowing students' attitudes is necessary to help students succeed as expected (Hançer & Uludag, 2007), since the prime goal of basic mathematics education is to help children grow positive attitudes toward mathematics. To evaluate the current educational system and, if necessary, make changes, it will be helpful to know how much each student achieved their educational goals. It will be helpful to identify student attitudes that can be influenced by many factors in order to address students' prejudices, ignorance, and learning challenges with relation to mathematics. It is believed that education is a deliberate process with goals that is intended to help students develop positive behavioural changes. It is hoped that this process will help students' attitudes toward mathematics in all elementary school grade levels change for good

Students' attitudes mostly can change overtime due to the meaning students get in learning mathematics. Attitudes of students towards mathematics are positively influenced when they aware that the good performance in mathematics is interrelated to their well-being and the society as a whole, Singh, Granville, & Dika (2002) related these interrelated variables of students as attributes that influence good attitudes to mathematics. Based on Charles (2019) study, attitudes of students to mathematics is related to ideas and scientific thinking as being inquisitive, analytic with all claims, a demand of attestation and respect of thought in the mathematical field. Attitudes of schoolchildren towards mathematics in TVET institutions are very essential in the education system, but little is known about the subject in the TVET (Bakker, 2014).

Demographic Factors influencing students' attitudes on Mathematics

Mathematics performance and student attitudes have been linked to a variety of demographic characteristics of students by many academic studies. Many predictors of high achievement of mathematics

have been made through various demographic variables such as age, gender, parental educational background, living status with parents, parents' marital status will be discussed in this study as predictors for mathematics performance among TVET students in the Kpando Municipal assembly.

Age

The cognitive skills of individuals change as one grows in age (Murman, 2015). Kunwar (2020), attest that student in the lower age groups have more favourable attitude toward mathematics better than students in the higher age groups. This indicates that students become aware of importance of mathematics at early age but their attitude toward mathematics decreases as their age increase. Voyles (2011), on the other hand stipulates that, older learners in the group did better academically than younger children in mathematics.

Gender

According to a meta-analysis, males do better on problem-solving mathematics tests than females (Hyde, Fennema, & Lamon 1990). Gender gaps in mathematics education appear to be reducing in many nations, according to recent studies. It has also been affirmed by some researchers that females prefer to learn mathematical concepts through rules or coordinated activities, whereas males prefer to compete to master mathematical concepts (Peterson & Fennema, 1985). In a quantitative survey design studied by Kunwar (2020), the gender-specific mean scores of students' attitudes toward mathematics indicated no substantial gender difference in pupils' attitudes about mathematics. A causal-comparative study technique by Voyles (2011) also revealed that student gender had no value on accomplishment scores on mathematics. The aim of Waheed (2011), study on second cycle students' feelings toward mathematics in selected Maldivian schools was to ascertain the students' attitudes toward mathematics and identify if there were any gender disparities in those attitudes, to get at this conclusion, a survey was run. 200 students in grades 9 and 10 in total were chosen for the survey, he developed and distributed a questionnaire to learners to ascertain their attitudes. The learner gave answers to questions asked on their intensity of comfort with mathematics and how valuable they believed it was. A T-test was adopted to evaluate if there was a noteworthy relationship between gender and attitude toward mathematics. The findings specified that schoolchildren have a good attitude toward mathematics and that there is no gender difference in this attitude. In an effort to understand and compare how certain variables affect second grade learners' attitudes about mathematics, Köğçe, Yıldız, Aydın, & Altındağ (2009) conducted a study which utilizing the survey method. The Mathematics Attitude Questionnaire that consisted of 37 items with 5 possible responses for each one was employed as a method for gathering data. In this study, 200 elementary school pupils from two diverse primary schools in Trabzon, Turkey, were given the questionnaire during the 2007–2008 academic year. Independent-samples T-tests and One-Way ANOVA were applied to evaluate the data. According to their grade levels, but not their gender, pupils' opinions toward mathematics were found to differ significantly

Parents' Educational & Socio-economic Status

Math prospect of students' is known to be influenced by some socioeconomic background of parents. How can math teachers overcome disparities in performance based on socioeconomic factors? (Reyes & Stanic, 1988), are what many scholars ask. Students of color, kids struggling to make ends meet, and students who live with others are denied some educational avenues. According to Reyes & Stanic (1988), in mathematics many female students and students from disadvantaged socioeconomic backgrounds do not achieve their full potential. Low socioeconomic status is known to be an adverse impact on academic achievement, in portion because it inhibits children from having access to a wide range of educational materials and tools. It also makes the home environment upsetting, which may have been brought on by disturbances in parenting or a higher risk of family disputes.

Strategies Teachers Employ to Address the Issues of Negative Attitude to Mathematics

According to Furner & Berman (2003), teachers need to be much aggressive in motivating learners to be more enthusiastic about mathematics so that they can boast in confidence and competency in solving mathematics problems. In regards to curbing behaviour of students towards mathematics, many researchers have done series of works to support the argument. While some claim that altering certain pupils' attitudes toward mathematics is difficult, others suggest the contrary. Many factors have been underlined to explain the diversities in learners' behaviours toward mathematics and the development of more adverse actions with elevating school grade, such as the stress on learners to complete magnificently, unfavourable teachings methods, overly complex tasks, less desirable attitudes towards teaching on the part of the teachers. Studies by Köğçe, Yıldız, Aydın, & Altındağ (2009), revealed substantial disparities in the views of junior and senior students toward math, with senior secondary students tend to have low and unfavourable attitudes about the

course as in comparison to elementary and low performing students. My Assignment Help (2017), underlined two parameters for overcoming negative attitudes towards mathematics, these are;

1. Building student's confidence in doing mathematics: According to the article, it is not amazing that learners experience less confidence in dealing with mathematics, leading to the development of fear and, as a result, unfavourable attitudes toward mathematics. Some strategies teacher's use in alleviating negative attitudes towards mathematics is by boasting students' self-efficacy. Therefore, it is imperative for teachers and tutors to assist students in developing their sense of self-confidence. This will reduce their anxiety and dread of the subject since they will feel extra capable and driven to complete arithmetic activities, which will result in the growth of a proper attitude.

2. Strengthen elementary skills of the learners: There is the need to develop the skills of students in basic numeracy. Teachers must provide chances for learners to practice mental math and so as to understand important skills for students to do well in the subject.

Increasing the sense of belongings of pupils in mathematics classroom is a major strategy in addressing negative attitudes towards the subject. In their mathematics classrooms, teachers should foster engaging and safe learning environments and set a positive example for students to follow. This may greatly aid pupils in adopting a positive attitude toward the material, learning it without reservation, and ultimately improving their performance. (Master and Walton 2013).

According to Eshun (2004), attitudes are a learner's inclinations toward specific aspects of mathematics that he or she has acquired via experience and perceptions that vary over time. As a result, a person's favourable attitude toward mathematics is likely to deteriorate over time, whereas a bad attitude can be transformed into a positive one in other circumstances over time.

III. METHODOLOGY

Research Design

The work applied a descriptive survey approach that included the use of questionnaires. The study used a descriptive survey to determine what educators and learners thought about teaching and studying mathematics in the Kpando Municipality. McCombes (2020) opines that for research that is aimed at identifying characteristics, trends, frequencies, and categories, descriptive research is best used. Descriptive survey is best in gathering, summarizing and interpreting information for understanding social issues

Population

The population for a research work is the entire collection of all possible units of individuals whose attributes or characteristics are to be studied by the researcher. Mugenda and Mugenda (2003) define the target population as those individuals, objects or events that have common traits to under study. Kpando Municipality has four pre-tertiary schools of which two are TVET institutes which is the interest of the researcher.

The target population for the research is math teachers and third year students in the two TVET Institutes in the Kpando Municipality, 14 Mathematics teachers, and 816 form three students of the TVET Institutes (see Table 3.). Because the form three students were completely exposed to school curricula, the class was chosen for the study. Similarly, the teachers had worked with these pupils for a long time and had completely established the strategies they utilized. Students in Forms Two and One were not considered since they were not properly exposed to the school curriculum before the research.

Table 2. Target population

School	Teachers	Students
C.Y.O TECH/VOC. INST.	4	256
KPANDO TECH INST.	10	560
TOTAL	14	816

Sample Size and Sample Techniques

Non-probability sample technique was used because the researcher targeted a particular group. Purposive sampling was applied to select the schools, and mathematics educators. According to Cohen et al, 2000, the researcher can hand pick cases to include in the samples on the reason for their evaluation of their typicality in the purposefully selected samples, the schools and teachers were therefore selected on purpose. Students on the other hand were sampled using stratified sample. This is because the technical vocational schools are divided into homogeneous group as departments where each group has unique characteristics. According to Cohen et al. (2000), a stratified sample is an effective combination of randomization and categorisation.

In this research, students were grouped in departmental base (Strata) and simple random sampling was used to select students from each stratum to represent the entire population. In selecting the students, they were

given numbers which was put in an enclosed bowl from which the required number of students picked from each stratum. The population and sample utilized for the research are displayed in the table below.

Table 3. Population and Sample Size

Categories	Total	Sample
Principals	2	2
Mathematics Teachers	14	14
Students	816	262

With a 95% confidence interval and 5% margin of error, a sample of 262 students were selected from 816 students, and 14 mathematics teachers participated in for the research.

Research Instrument

For the research, questionnaires were utilized to gather information from instructors and students. On the survey, respondents had a choice between open-ended and closed-ended questions. Respondents had to provide thorough answers to open-ended questions. Questionnaire was used because it keeps the identity of respondents, hence enhancing fair and honest responses. In a study of this kind, where variables under investigation and study requires statements of facts and high personal responses of concern, the questionnaire is seen to be a good instrument to obtain valid and trustworthy data. The questionnaire was completed by both educators and the pupils.

The questionnaire for teachers was used to answer question on their attitude towards teaching mathematics. In contrast, a student survey was utilized to gauge pupils' attitudes toward mathematics. Most questions in both the teachers and the students' instruments were multi-dimensional in nature and as such they are largely Likert scale items that allowed the respondents to identify their views on the a five-point scale: strongly agree (SA) = 5, Agree (A) = 4; undecided (UD) = 3; Disagree (DA) = 2; to Strongly disagree (SDA) = 1.

Additionally, the questionnaire was used to gather demographic data from both educators and pupils. For teachers, these factors included gender, age, professional qualification, and number of years of teaching experience; for students, they included gender, age, and programs.

Data Collection Procedures

The questionnaires were well explained to both teachers and students before administering. They were assisted in any difficulties in answering the questionnaires so as to acquire fair and accurate responses. Charts and tables will be created to display the range of replies to each topic as well as the number of respondents. The data obtained was pursued using quantitative approaches. The data was analyzed and discussed in accordance with the study questions.

Data Analysis

The quantitative data were organized and analyzed using the Statistical Package for Social Science (SPSS). Each study question was introduced, followed by the presentation and analysis of the data using the SPSS package tool.

IV. ANALYSIS OF DATA

The attitudes of students towards teaching Mathematics in the pre-tertiary TVET schools in the Kpando Municipality

Examining students' attitudes about learning mathematics at pre-tertiary TVET institutions in the Kpando Municipality is another goal of the study. The students' ratings of attitude statements regarding their arithmetic learning were compiled and examined to provide a response to this topic. The results of the descriptive statistics (mean & standard deviation) of the students' ratings of the attitude statements are shown in Table 4.2. A useful base for comparing and describing the students' perceptions of learning mathematics is the mean score on the statement. The mean scores on the rated attitude statements and the students' overall mean attitude are exhibited in Table 4.

Table 4. Descriptive Statistics students' attitudes towards Mathematics in TVET schools

S/N	Attitude Statements	Mean	Std. Deviation
1.	Mathematics is one of the difficult school subjects	3.18	1.444
2.	Males have more natural abilities to do Mathematics than females	2.97	1.059
3.	There is always a rule to follow in solving a mathematical problem	2.92	1.037
4.	Teachers' encouragements make me learn Mathematics	2.91	1.129
5.	It is important to know Mathematics in order to get a job	2.75	.949
6.	Trial and error is very useful in solving Mathematics problems	2.71	1.062
7.	Memorisation is a large part of math education	2.70	1.117
8.	My Mathematics results discourage me from doing Mathematics assignment	2.67	.975
9.	A knowledge of Mathematics is not necessary in most occupations	2.57	1.162
10.	I can get good grades in Mathematics	2.54	1.004
11.	I feel comfortable answering Mathematics questions in Mathematics class	2.49	1.053
12.	I can get along well in everyday life without Mathematics	2.49	1.001
13.	Most Mathematics concepts have practical uses on my course	2.46	1.099
14.	Mathematics is easier for me than any other school subject	2.38	.834
15.	Mathematics helps one think according to strict rules	2.37	1.020
16.	There are different ways to solve Mathematics problems	2.33	1.100
17.	Mathematics is a useful subject for TVET students	2.31	.939
18.	I can do more difficult Mathematics	2.24	.975
19.	Mathematics helps me to think logically	2.20	.925
20.	Mathematics is more difficult for me than it is for most other learners	2.16	.994
21.	Mathematics is a good field for creative people	2.06	.814
22.	Mathematics is useful in solving everyday problems	1.96	.794
23.	No matter how hard I try, I cannot understand Mathematics	1.93	.683
24.	Practical work takes most of my time for doing Mathematics	1.87	.787
25.	Most people do not use Mathematics in their jobs	1.77	.770
All	Overall Attitude Score	2.44	

Source: Researcher's field work, (2021)

From Table 4. The attitude statements that the students agreed with most (that is, items with the top highest means) in the instrument are:

- Mathematics is one of the difficult school subjects.
- Males have more natural abilities to do Mathematics than females.
- There is always a rule to follow in solving a mathematical problem.
- Teachers' encouragements make me learn Mathematics.
- It is important to know Mathematics in order to get a job.
- Trial and error is very useful in solving Mathematics problems.
- Memorisation is a large part of math education.
- My Mathematics results discourage me from doing Mathematics assignment.
- A knowledge of Mathematics is not necessary in most occupations.
- I can get good grades in Mathematics.
- I feel comfortable answering Mathematics questions in Mathematics class.

The ratings in Table 4 therefore suggest students see mathematics as a difficult school subject, male students have more natural desires and strength learn mathematics than the females. Mata, Monteiro & Peixoto (2012) had similar observation about decline attitudes of females in math, they believe in following rules or procedures to solving mathematical problem, they learn due to teachers encouragements, to know mathematics is important to them for job sake, they see trial and error as very important in solving mathematics issues, they memorise more when they learn mathematics, they are discouraged by their mathematics results, they see mathematics knowledge not necessary in most occupations, they believe that they can acquire good grades in learning mathematics, and they feel comfortable when answering mathematics questions. Similarly, the attitude statements that the students disagreed with most (that is, items with the bottom lowest means) in the instrument were;

- Mathematics is a good field for creative people.
- Mathematics is useful in solving everyday problems.
- No matter how hard I try, I cannot understand mathematics.
- Practical work takes most of my time for doing mathematics.
- Most people do not use mathematics in their jobs.

These implied the students did not see the application of mathematics in solving difficulties in daily life and as an excellent field for creative individuals, they understand mathematics when they try, practical work does not take most of their time for doing mathematics, and most people use mathematics in their jobs. The standard deviation ranged from .683 to 1.444, representing the measure of dispersion which widely spread the distribution. This means that most items measuring attitudes of students towards Mathematics in TVET schools were high.

What TVET Mathematics teachers think can be done to improve students' attitude to mathematics

Examining what TVET Mathematics instructors believe can be done to improve the situation in the Kpando Municipality is one of the study's main objectives. To answer this question, the teachers' ratings of thinking statements about what can be done to improve the situation were organized and analyzed. Table 4 presents the results of the descriptive statistics (that is, mean and standard deviation) of teachers' ratings of thinking statements. The mean score on the statement provides a meaningful basis for comparing and describing the teachers' thinking about what can be done to improve the situation. Table 4 shows the mean scores on rated thinking statements and the overall mean teachers' thinking.

Table 5. Descriptive Statistics for what TVET Mathematics teachers think can be done to improve the situation

S/N	Strategies statements	Mean	Std. Deviation
1.	Application of mathematical games in teaching Mathematics	3.64	1.447
2.	Have learners correct mistakes so that they learn how to do the task and that effort pays back	3.00	1.414
3.	Focus group discussion method of teaching Mathematics	2.64	.745
4.	With a difficult concept or problem introduced, inform learners of this fact, so they can understand why it is challenging	2.57	1.016
5.	Poor work of students can be regarded to be a sign of learned helplessness instead of an indication of laziness	2.43	.756
6.	Organisation of Mathematics clubs	1.93	.730
7.	Provide each student with success experiences early on	1.79	.426
8.	Evaluate students work, draw attention to instances of good thinking and partly correct answers	1.50	.519
All Overall Thinking Score		2.44	

Source: Researcher's field work, (2021)

From Table5, the thinking statements that the teachers agreed with most (that is, items with the top highest means) in the instrument were:

- Application of mathematical games in teaching Mathematics.
- Have learners correct mistakes so that they learn how to do the task and that effort pays back.
- Focus group discussion method of teaching Mathematics.
- With a difficult concept or problem introduced, inform learners of this fact, so they can understand why it is challenging.

The ratings in Table 5. shows teachers' suggestion on how to improve the situation. Mathematical games should be applied in teaching mathematics Orim & Ekwueme (2011) gave similar findings, students should correct errors, focus group discussion method should be employed in teaching mathematics, Hoyles (1985) also discussed the potential effects of using student-student discussions in mathematics classes and the various ways that such debate might advance knowledge of mathematics. Also, teachers must inform students about difficult concept or problem.

Similarly, the suggestion statements that the teachers disagreed with most (i.e., items with the bottom lowest means) in the instrument were;

- Provide each student with success experiences early on.
- Evaluate students work, draw attention to instances of good thinking and partly correct answers.

These implied the situation will not improve when each child is provided with early success experiences and partially correcting answers and drawing attention to instances of good thinking and evaluating students work. The standard deviation ranged from .426 to 1.447, representing the measure of dispersion which widely spread the distribution. This means that most items measuring what TVET Mathematics teachers think can be done to improve the situation were high.

V. PRESENTATION OF FINDINGS

Students attitudes towards mathematics in TVET schools

Findings revealed that most students' response was Mathematics being one of the difficult school courses,

It was observed from the study that many students had it in mind that there is constantly a rule to follow in answering a mathematical problem, as similar observation were made by (Peterson & Fennema, 1985; Kunwar 2020) who found that many students think when addressing a mathematical issue, there is always a rule to adhere to. Teachers' encouragements make me learn Mathematics was also found out as the ways they motivate students to take interest in mathematics, Rawnsley & Fisher (1998) also attested to that, with student knowing the importance Mathematics play in order to get a job, they learn the subject as it can be confirmed in an article by Kennedy (2019). The majority of students also stated that memorization is a large part of learning

mathematics and that trial and error is very helpful in solving problems. The next variable that was mostly acknowledged by most students is that their Mathematics results discourage them from doing Mathematics assignment. This was in similitude to the report of Mislina and Fauziah (2017). Students also concurred that the majority of vocations do not require understanding of mathematics. The pupils realized that, despite all of their flaws, they can still succeed in mathematics because they have faith in the field's advancement. Akey (2016) hinted in a related finding. As evidence of some of the students' perceptual attitudes regarding mathematics at TVET schools, some students also concurred that they felt at ease answering questions in mathematics in class.

What TVET mathematics teachers think can be done to improve the situation

Findings revealed that most teachers responded that application of mathematical games in teaching Mathematics was what TVET Mathematics teachers think can be done to improve the situation. Orim & Ekwueme (2011) hinted a similar observation that games in the course can make it much enjoyable. Teachers also the perception of having learners correct mistakes so that they adopt how to do the task and that effort repays back. The next in line attitude of teachers should be using is focus group discussion method of teaching in mathematics classes, Ellianawati, Rudiana & Sabandar, (2018) also hinted on similar observation. It was also observed that teachers do inform students with a more difficult abstraction or problem. This information is provided to pupils by teachers, so the difficulties the student will be having is justified. It was also observed that the organization of mathematics clubs for the TVET schools will help in building some good attitudes towards math, this also conforms to Prescott & Pressick-Kilborn (2015) who found out that many children view math clubs as being incredibly engaging, with lots of opportunities to collaborate with teachers and other students.

VI. Conclusion

It was revealed that most of the students responded that mathematics is a difficult school course. This was evident in students' attitudes towards mathematics in TVET schools. Males' having more abilities naturally to tackle mathematics better than females was evident in students' attitudes towards mathematics in TVET schools. There has always been a guide to channel through in solving a arithmetic issues and problem. This was students' behaviours towards mathematics in TVET schools. In TVET schools, pupils' attitudes toward mathematics were influenced by teachers' encouragement to learn the subject. Student had an attitude of the importance of knowing mathematics in order to get a job. Students' perception towards mathematics in TVET schools were examined in this study, and it was discovered that students' attitudes toward mathematics in TVET schools were that learning mathematics primarily entails memorisation and that trial and error is an effective method for solving mathematical problems.

It was also identified that the use of mathematical games in tutoring mathematics is what TVET mathematics teachers believe may be done to improve the situation. Also, correcting mistakes made by kids helps them learn how to complete tasks and that effort is worthwhile, the focus group discussion method of teaching mathematics, explaining a difficult idea or problem to pupils so that it depicts the struggle the pupil is experiencing, lowly work of students can be seen to be an emblem of learning helplessness rather than an evidence of laziness, the organization of mathematics clubs for the TVET schools, and giving each child success stories are other techniques that can help students succeed in their studies, and educators evaluate their learners' work and point out examples of sound reasoning and partially accurate responses.

Furthermore, it was found that most of the teachers responded that students in their mathematics classes are exposed to debating their own thoughts and comments. When it comes to teaching mathematics, teachers are enthusiastic. Mathematics is very important in teachers' daily lives. Mathematics is essentially a practical and organized guide for dealing with real-world problems. Teachers make a great effort to make mathematics an enjoyable subject for their students. Teaching mathematics requires the representation of real-life situations. Mathematics is the domain of human innovation and creativity that is always advancing. Memorisation is the most important aspect of learning mathematics. Continuous Practice and Demonstration aid in the improvement of mathematical concepts' knowledge and skills. Teaching mathematics is quite challenging.

VII. Recommendations

Future studies should focus on the motivational factors to support students in improving their academic performance. Government institutions, scholars, academia, and other stakeholders should consider the findings of the current study when making decisions on teachers' attitudes and students' demographic factors influencing poor students' performance in mathematics, most especially in the TVET schools in the Kpando municipality in particular and the country as a whole.

It is also recommended to stakeholders to take mathematics to the heart of TVET education to ensure much development in the sector since technical education in the global village today is the backbone to the development of a nation.

Mathematics instructors are recommended to motivate learners to put in additional effort outside the jurisdiction of class lessons and phobic students are also to be given extra course works to enhance them on many trials so as to ensure high marks in their respective exams, since there is an influence of students in their scores gained during assigned works. It would be of great help if same work can be done to access the attitudes of male and females on mathematics learning and performance in the TVET institutes in Ghana.

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