A STUDY ON SCHOOL FACTORS INFLUENCING TUDENTS'ATTITUDES TOWARDS LEARNING MATHEMATICS IN THE COMMUNITY SECONDARY SCHOOLS IN TANZANIA: THE CASE OF BUKOBA MUNICIPAL COUNCIL IN KAGERA REGION

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF EDUCATION IN ADMINISTRATION, PLANNING AND POLICY STUDIES OF THE OPEN UNIVERSITY OF TANZANIA

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled**: A study on school factors affecting students' attitudes towards learning mathematics in the Community Secondary Schools in Tanzania, The Case of Bukoba Municipal Council in Kagera Region,** in fulfillment of the requirements for the Degree of Master of Education in Administration, Planning and Policy Studies of the Open University of Tanzania.

……..

Prof. Babyegeya E.N.B

(Supervisor)

Date……..

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DECLARATION

I, George Joseph, declare that it is my own original work, and that it has not by any means in whatsoever, been presented to any university for award of a similar degree.

Signature …….

Date ……..……

DEDICATION

I dedicate this dissertation to my dearest wife, son, and two daughters: Zawadi (Edickedness), Tumwesige (Aidan), Kokushubira (Neema) and Kokusiima (Neelam) and last but not least, my grandmother Haliziki Feliciana Felician.

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ABSTRACT

This study examined the school factors influencing students' attitudes towards learning Mathematics in Community Secondary Schools in Tanzania and to establish the strategies that can be adopted to improve mathematics performance by students in Secondary Schools in Bukoba Municipality in Kagera Region in Tanzania. For the purpose of the study, respondents responded to a combination of four instruments namely interview, questionnaire, focused group discussion and documentary review. The data for the research was collected by the use of questionnaires; one for students and another questionnaire for teachers. Key findings revealed that students' attitudes towards mathematics were influenced by other variables such as students' learning styles. Similarly, with respect to gender differences, the present study's findings were consistent with those variables, but there is no significance gender established. The study recommended that there is a need to develop a love for mathematics through the setting up of "Mathematics Clubs" in every Secondary school. Its aims should be to help students develop positive attitude towards Mathematics and develop a love for Mathematics. Also since the present study was limited to Community secondary schools, similar studies could be carried out to cover public and private schools as well as other sectors of education. This present study might be a pointer in such directions.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Problem

This study dealt with the school factors influencing students' attitudes towards learning mathematics in Tanzania. It was organized in sections such as mathematics performance in Tanzania, attitude as a correlate of human performance, definition of the problem, objective and purpose of the study, significance of the study, key research questions, and conceptual framework, scope of the study, and delimitations and definition of terms.

A crucial situation arises when one is in danger but does not know. A problem becomes critical due to lack of awareness of its existence (Anonymous, 2002).Considering the backwardness of educational development in Tanzania generally and Bukoba Municipality in Kagera Region in particular, one may ask about the poor attitude of students towards Mathematics and poor educational background of the area in other science related courses. Having realized the importance of Mathematics in all areas of life, the researcher deemed it fit to go into study in order to find out reason(s) behind these problems as well as proffering solution to them.

1.1.1 Mathematics

The dictionary of mathematics defines mathematics as the logical study of shape, arrangement, quantity, and many other related concepts (Kumar, 1988). Mathematics mainly uses numerical and figures to explain the phenomenon under investigation and it is often used in sciences and other subjects. Bochner (2007)

views Mathematics as an indispensable medium by which and within which scientists express, formulate and communicate scientific phenomena. It is generally divided into three fields namely, algebra, arithmetic and geometry.

1.1.2 Mathematics Performance in Tanzania

Chonjo and Wellford (2001) attribute such students' failure in science subjects to pedagogical ways of teaching subjects. This covers ways in which mathematics is taught and learnt, the nature of syllabus, the quality and competence of subject teachers. It also covers the degree to which students are motivated to master the content, availability of teaching materials and their uses, and the nature of examination settings.

Idama and Ndabi (1996) analyzed the Form Four National Examination results and candidates' responses to the examination questions in science subjects such as physics, chemistry, biology and mathematics for the sake of identifying the students' areas of weakness that lead to weak performance in examinations for science subjects. They reported that weak performance in mathematics was a result of lack of enough exercises and practice, concepts not properly understood, ambiguous questions, incorrect interpretation of information, misinterpretation of question demands, inadequate of basic background knowledge, abilities and skills, failure to state and apply the correct formulae, theorem or notation, and failure to construct the correct diagrams.

Referring to National examination results at all levels, it seems that many students have been performing poorly in mathematics subject. Different researches from

different academicians have been conducted and suggestions have been given out but still there is no improvement among the students in learning mathematics.

1.1.3 Attitude

Ajzen (1988) and Franzoi (2000) define attitude as a positive or negative evaluation of an object. An object could be for example, people, things, events and issues. For instance the common characteristics of attitude is its evaluative nature such as like, dislike, love – hate and pleasant – unpleasant (Franzoi, 2000 and Ajzen, 1988). Bolaji (1996) has provided an overview of many aspects of attitudes towards mathematics including a review of instrumentation; it is still unclear how the school environment affects the development of students' attitudes towards mathematics. That is to what extent students believe the school influences their attitudes towards mathematics, i.e. whether they like or dislike mathematics.

Attitude and human performance have been worldwide studied. According to Ajzen 1988, 1991 and Henerson et al. (1987) people who evaluate an attitude object favorably are likely to experience positive behavioral reaction towards such an attitude object. In the same way, Libent (2003) and Henerson et al. (1987) argue that people who evaluate an attitude object favorably tend to engage in behaviors that foster or support it, and people who evaluate an attitude object unfavorably tend to engage in behaviors that hinder or oppose it. Take for example, a student who believes that mathematics is enjoyable is likely to perform well in mathematics and ultimately become a mathematician, and the opposite is true.

Furthermore, learning Mathematics concepts is necessary and should be required for all students. Nevertheless, accelerated changes of the last decades in technology have brought discipline, curriculum and philosophical changes. There has always been an interest in the development of positive students 'attitudes towards learning Mathematics. The objective of any Mathematics curriculum includes fostering favourable feelings towards Mathematics as well as importing cognitive knowledge unity Secondary School Students towards school influence on their attitudes towards Mathematics. That is, to what extent, do students believe the school influences their attitudes towards Mathematics i.e. whether they like or dislike Mathematics?

Additionally, attitudes are not only feeling, that help prevent access, but also place a limit on students learning. If a person does not like Mathematics, he /she may feel anxious when expected to utilize this. Such a person is unlikely to learn and obtain skills or participate in assignments that require the use of mathematical knowledge. On the other hand, students who exhibit positive attitudes towards a subject are more likely to actively engage during and after instruction. When students dislike Mathematics, their attitudes are reflected in actions resulting in limited engagement with Mathematics. So in a sense the attitudes affect subsequent actions, it is acknowledged in the study that there are many other factors that influence students' attitudes towards Mathematics.

Moreover, the aim of the study was to gain a deeper understanding of the way in which factors such as classroom environment, teachers, students' perception, gender differences play role in how students view Mathematics in Community Secondary

Schools in Tanzania. It is almost impossible to develop Mathematical skills when factors related to students' attitudes towards Mathematics are not identified as a matter of urgency, and feasible strategies and interaction programme organized, such strategies might help to addressing the problem and hopefully encourage students in adopting meaningful and positive attitudes towards Mathematics. This a view also was expressed by Osthelizen (1994) when she stressed the need for teachers to have an understanding of their students' knowledge and feelings about the subjects they teach.

In the study the researcher explored the attitudes of students in Community Secondary Schools towards learning Mathematics. Attitudes in the study was defined as negative or positive emotional relationship with or predisposition towards an object, an institution or person (Le Roux ,1994).This definition explains the fact that attitudes has to do with people emotions and this influences their behavior. This suggests that attitudes determine individuals' experiences and reaction to life.

1.2 Definition of the Problem

There are so many factors that influence and motivate learners to learn effectively. To many educational psychologists, attitude towards learning is one of the main factors that influence and motivate learning. It is argued by Dalin (1998) that right attitude towards something is what matters to motivate one to achieve. If the attitude of the leaner towards learning is positive, effective learning will take place and if negative learning becomes difficulty to happen. In life, mathematical knowledge and skills are vital to success regardless of activity one is involved. As such, the teaching

and learning of Mathematics is basic in the school curriculum for quality education. All efforts should be done by parents, students, teachers and society at large to ensure that Mathematics is taught and learnt effectively in schools.

However, for these efforts to be successful, changes should first take place in the attitude of learners towards Mathematics. How do students feel when they hear the Mathematics? Do students foresee the importance of mathematics in life after school? What is the relationship between students and their mathematics teacher? To what extent students are interested towards learning mathematics? What is the nature of school environment in teaching and learning mathematics? Is the school environment supportive and motivating for students to learn mathematics effectively? This study intended to investigate some answers to these questions that have a bearing on students' attitude towards mathematics.

1.3 The aim of the Study

This study aimed at examining school factors influencing students' attitude towards learning mathematics in the community secondary schools Tanzania.

1.4 Specific Objectives of the Study

The study was guided by the following objectives;

1. To assess students' perception towards learning mathematics in the Municipal community secondary schools.
2. To examine whether classroom interaction of teachers with students influences students' attitudes towards learning mathematics.

3. To find out whether schools provide supportive inputs to facilitate better learning of mathematics.

1.5 Research Questions

The following research questions guided the researcher.

i. How do the students perceive learning mathematics in the community secondary schools?

ii. Does the classroom interaction between teachers and students influence students' attitudes towards learning mathematics?

iii. Do schools provide supportive inputs to influence better learning and teaching mathematics?

1.6 Purpose of the Study

The purpose of this study was to examine the school factors influencing students' attitudes towards learning mathematics in the community secondary schools in Tanzania. Furthermore, the purpose of the study was to explore the reasons as to why there is a continued decline of students' performance in mathematics as reflected in the National Examination Results.

1.7 Significance of the Study

Mathematics performance at Ordinary Level National Examinations has been very poor for quite some time in Tanzania. The subject is very important in students' lives, whether for students who continue with studies or those who opt for different careers. In this respect, there is a fundamental need to boost better performance in the subject.

The study is useful first to students and teachers because they will be able to improve teaching and learning processes and performing mathematics work by themselves. Secondly, the education administrators and policy makers will be able to formulate policies that improve mathematics subject and guide students in performing mathematics activities. Thirdly, donors and nongovernmental organizations as educational stakeholders will inject in supportive inputs to schools for the improvement of mathematics and the sciences. Also the teachers will identify their deficiency and limitations as regards to the teaching and learning of mathematics.

1.8 Delimitations of the Study

The study was expected to cover the entire community secondary schools in Tanzania to find out those factors influencing students' attitudes towards learning mathematics at the community secondary school level. Considering the fact that Tanzania is a heterogeneous country with numerous secondary schools including public, community and private secondary schools, the study was limited to some selected schools in Bukoba Municipal Council, in Kagera region.

1.9 Limitation of the Study

The schools selected as a case study of this research where participants came from, has a group of students who are registered as day students. The major limitation to this study was that some students could not be properly investigated. This is because of the truancy that would need to be tolerant to meet the students. Other limiting factors were outside the scope of this investigation, for example students' environment outside of school such as family and cultural background.

The study was also limited by lack of funds to go into studying the entire secondary schools in the country Tanzania in order to investigate other factors apart from these. Notwithstanding, the present study's results will be of value and they can be compared to other research studies that have investigated issues relating to students' attitudes and school environment towards learning mathematics.

1.10 The Concept of Attitude in Learning Mathematics

The concept of attitude is guided by the ABC model of attitude that has three components namely, affect, behaviors and cognition. Rajecki (1989) cites in Feldman (2000 that 'A' stands for Affect component, B stands for Behavioral component and C for Affect component. The Affect component encompasses people's positive or negative emotions about it. The behavior component consists of a predisposition or intention to act in a certain particular manner relevant to people's attitude, while cognition component refers to beliefs and thoughts people should hold about the object of attitude towards mathematics and may consist of a positive emotion (affect component), an intention to, learn the subject (behavior component) and beliefs that mathematics is a very simple subject to learn (cognition component).

Le Roux (1994), defines attitude to be a positive or negative emotional relationship with or predisposition towards an object, institution or person pointing to yet another definition, Becker and Wiggins (1991) defines attitude as enduring non-verbal features of social, and physical world, and they acquired through experience and exert a directive influence on behavior. Both these definitions reveal that, an attitude can be understood as an emotion that has an influence on the behavior of human being.

People's responses towards certain things largely depend on how they perceive them. Therefore, the researcher's understanding of what attitude means, corresponds to responses of an individual to a particular object (mathematics as subject) in a particular favorable way (Arjzen, 1991).

CHAPTER TWO

1.0 LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature that is related to this study. Literature review is a systematic identification and analysis of documents containing information related to the study The chapter is presented in subheadings like; theoretical review, the empirical review which has sub-headings such as development of mathematical reasoning, attitudes and mathematics performance, overview of Attitudes Development, nature and importance of mathematics, mathematics programmes, classroom learning environment, the mathematics teacher, the student's related factor, the knowledge gap and summary.

2.1Theoretical Review on School Learning

A theory of school learning will be considered relevant for guiding the discussion of the future study, this is a theory developed by Bloom (1976). The theory assumes that each learner enters a particular course, class, school grade, or school program with a historical background which has prepared him/her differently from other learners with regard to the learning to be accomplished. The theory is ideally intended to explain the interaction between an individual learner's characteristics, the instruction, the learned topic and the learning finally accomplished. One of the student' characteristics which plays key role in determining student learning is the student's entry cognitive behavior, which is a prerequisite condition necessary for embracing learning task on which instruction is to be provided.

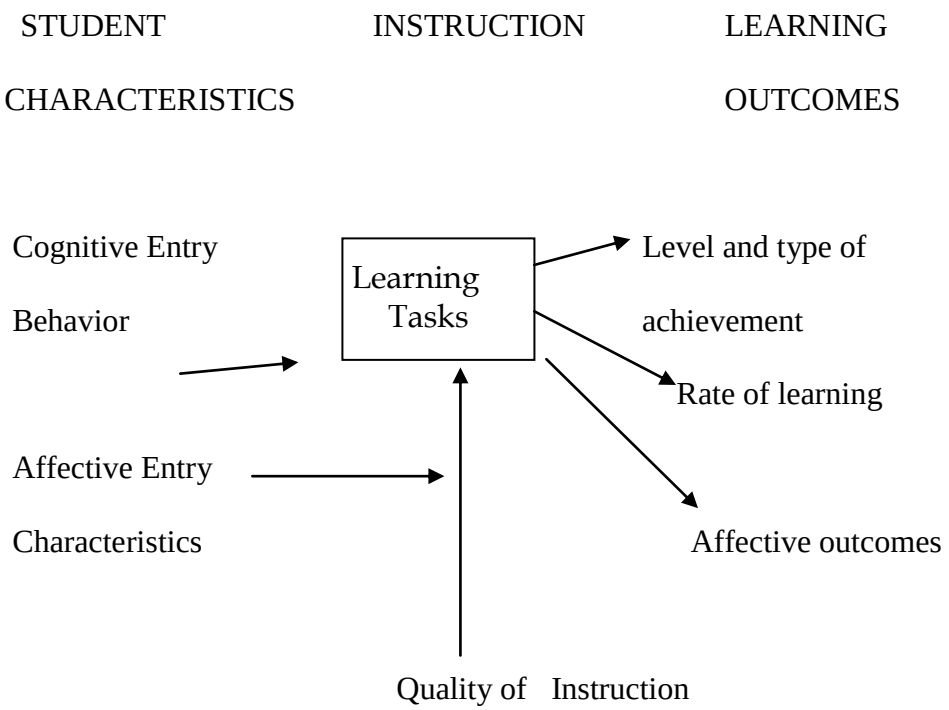

Figure 2.1: Major Variables in the Theory of Learning (Bloom, 1976)

The second characteristic is the affective entry characteristics, which refers to the student's motive to learn the new learning task. The theory argues that variation in cognitive entry, behaviors, affective entry behaviors and the quality of instruction will determine the nature of the learning outcomes. In applying this theory, attitude influences both the student cognitive and affective entry behaviors. According to Henerson, Moris and Fitz – Gibbon (1987) and Ajzen (1988), attitude has three major classes of evaluative responses which are cognitive, effective and behavioral. The theory also assumes that modifications are possible in the entry characteristics of the individual in the instruction of the learner or in both in order to affect higher level of learning of for Individuals and group. Figure 1 shows the major variables in the theory of school learning.

Under characteristics of the learner cognitive entry behaviors refer to those prerequisite types of knowledge skills and competencies that are essential to the learning of a particular new task or set of tasks, while Affective characteristics in the theory asserts that individual students vary in what they are emotionally prepared to learn well a learning task he or she should have an openness of the new task, some desire to learn it well, and sufficient confidence in himself/herself, have psychological preparedness and availability of resources in order to confront difficulties and obstacles in learning process whenever they appear.

Quality of instruction as defined in the theory of learning has to do with the dues or directions provided to the learner, the participation of the learner in learning activity (covert or overt), and the reinforcement which the learner secures in some relation t the learning. Because much of school instruction is group instruction and because any group instruction is fraught with error and difficulty, a feedback and correct system must be also included in the quality of instruction. The combined presence the variable such as cognitive entry behaviors, affective characteristics and quality instructions are expected to produce the outcomes such as level and type achievement, rate learning, and affective outcomes.

2.2 Development of Mathematics Reasoning

Santrock (2004) suggests that children already have a substantial understanding of numbers before they enter first grade. According to him, there are some development changes in the way children think about mathematics and their math abilities at different levels. For example, understanding basic aspects of numbers and geometry

are critical in kindergarten through the second grade. He asserts that at these grade levels, children need to learn the base-ten numeration system, and when they go to school, children learn more about advanced numerical skills. This does not mean that children end up learning skills to calculate numerals in a standard way, but rather, what they learn about mathematics and how to solve mathematical problems, reflects independent thinking as well as what they are being taught.

Thus, teachers use some advanced techniques to help students understand how algebra and geometry are connected. They are enabled to become adept at visualizing, describing and analyzing situations in mathematical terms. To them, mathematics should be taught using a step by step approach to a topic, however it is important to show students that mathematics topic are linked and that mathematics games are meant to help students develop mathematical thinking, by promoting understanding of mathematical concepts, knowing mathematical facts and skills, learning the language and vocabulary of mathematics and developing ability in mental mathematics.

There are many specific types of intelligence, or frames of mind, which match different occupations as well. There are verbal skills, mathematical skills, spatial skills, musical skills, intrapersonal skills, and natural skills (Santrock, 2004). Mathematical skills involve the ability to carry out mathematical operations, which is found among scientists, engineers and accountants. To him, mathematics skills are developed just like any other abilities, and these are partly natural.

2.3 Attitudes and Mathematics Performance

Majority of people think that mathematics is about computation. However, mathematicians see computation as a mere tool to solve math problems and understanding structure and patterns in mathematics (Santrock, 2004). Kiita (1994), argues that suffer from mathematics anxiety, which means a state of an extreme negative reaction in the face of mathematics class and assignments. This results in a distress and may also be referred to as fear of mathematics. Kiita argues that not every student holds negative attitudes towards mathematics but those who have a negative attitude towards mathematics do perform worse in the same vantage point.

Mwakitalima (2008) conducted a cross-sectional field survey in Mbeya region, where student' attitudes mathematics and normative beliefs were associated with students' mathematics learning. Student attitudes towards mathematics affect their performance. Mathe (1998) studied attitudes and achievement in secondary schools in Soweto, South Africa. His findings revealed that learners of mathematics had low self concept and self esteem. Despite of this, learners continue with mathematics because of pressure exerted by teachers, parents and their peer group.

Many students did not do the subject by their own accord. In addition, the findings indicated that there is a positive correlation between attitudes and achievements in mathematics. This suggests that there is a relationship between attitudes and performance. If students do mathematics do mathematics because of their desire to pass the subject, they will be likely to succeed in mathematics but if they have a negative attitude, there is likelihood to fail.

In a comparative study between rural and urban O-Level Secondary schools, focusing on girls' attitudes and performance in mathematics, Rukondo (2006) used a sample of 92 students to fill a questionnaire in Mara, the northern region of Tanzania. The study found that though there was no difference in attitude between rural and urban secondary schools, there was a positive correlation between attitudes and mathematics performance. In another study, Sekwao (1991) sought to find the determinants of mathematics and other science subjects in Tanzania. The study found that boys had more positive attitudes towards mathematics than girls.

In the same way, Fennang (2005) found that beliefs about the usefulness of mathematics and confidence in learning mathematics, were critical variables since male students provided evidence that they were more confident in learning mathematics than female students. Ever since the schools of the ancient Greeks, over 2000 years ago, mathematics has been a key subject in the curriculum. The four liberal arts which consisted of arithmetic, geometry, astronomy and music were basically mathematical studies.

The subject is the language of our increasingly technological advancement. It has always played an integral part in the clarification and description of a wide range of phenomena and situations, and has offered solutions to specific problems (Walters, 1975).Students endowed with mathematical skills can easily tackle problems because they can calculate without much difficulty. The subject trains the mind to reason quickly as was asserted by Travers, Pikaart and Runion (1977) that mathematics affords the mind, it is a sort of mental jogging that build up the mind and keep it fit.

Mathematics is taught in order to impart new knowledge to learners. A research which was carried out at King's College, London in the 1980s has suggested that when children learn mathematics, new knowledge is absorbed apart from existing knowledge for a period of time after initial teaching (William, 1991).This entails that ,mathematics learners learn more about problem solving each time they do the subject. Such knowledge enables people to shift in different working fields namely the world of Commerce, Science, technology and numerous everyday transactions that people perform.

Shan and Bailey (1991) argue that, the main objective of teaching mathematics and for that matter any other subject should be to doubt, to enquire, to discover, to see alternatives, to enhance a critical attitude of one's self, society and culture, and most of all to be an instrument in changing attitudes, convictions and perspectives. This makes mathematics a subject amongst other subjects that strive to teach the mind to be objective and make reasonable arguments in difficulty times.

For more than 30 years the investigation students' attitudes towards studying mathematics has been a substantive feature the work mathematics education research community. Its current importance is noticeable by the growing evidence of decline in the interest of young people in pursuing scientific and technological careers together with research indicating wide spread scientific ignorance in the general public (Purant et al.1989).

Consequently, the promotion of favorable science attitudes and learning of mathematics is extremely critical and important. However the concept of attitudes

towards science and mathematics is rather ill – defined often poorly expressed and not well understood. The future study therefore, offers a review of current knowledge about attitudes towards mathematics, what influences are on formation to determine some of the most important factors that influence the community secondary school students' attitudes towards mathematics in Tanzanian secondary schools.

Gordson (1975) cooper (1988) and Mammalian (1992) provide evidence that aspects of the classroom learning environment or climate are positively related to mathematics attitudes. An environment lower in intellectual demands, difficulty, and amount of friction or conflict is likely to show move students' attitudes positive (Armstrong, 1985). A number of studies have indicated that the personality and behavior of the teacher is very important in the formation of students' attitudes with one notable exception by Fennama (1976).

Moore (1993) found in a national sample of high school students that impressions the teachers of the teachers as "like" or smart" significantly predicated students' Anderson (1991) found that it is important for a teacher to be enthusiastic and the use of more indirect teaching behaviors. Ninth grade pupils' interest in mathematics was found by Reed (1968) to increase with teachers who utilized students' intrinsic motivation. Fennama and Sherman (1995) found that students of teachers who were well organized achievement oriented and enthusiastic tended positive mathematics attitudes. Moreover, although Thomas (1985) reported some studies which showed the curriculum and instructional variable related towards Mathematics as substantial

amount of research suggested that these variables made little or difference (Armstring 1985, Fennama and Sherman 1987, and Hyda, (1990).Some students have developed negative stereotypes of science and scientists who they view as "nerds" or mad scientists. Others describe scientists as hard, old, frightening and colorless (Rogers and Ford, 1997).

Several reasons have been suggested for negative attitudes including students' undesirable experiences in previous science courses and with instructors, lack of needed skills to learn and apply scientific concepts, lack of motivation to work hard in science classes, home background school and classroom environments, biases of peer groups, the media portrayal of scientists and students' perception of reward associated with learning (Roger and Ford, 1997).

Mathematics games are popular with teachers as alternatives to more traditional forms of respective practice, for many parts of mathematics curriculum and especially for arithmetical computation. The research literatures as well as popular commercial publishing support the idea that games can fire children's interest and motivation because students enjoy competition, challenge and fun (Bragg, 2003, Owens 2005, Gough, 1999).

Kloosterman and Gorman (1990) argue that, motivating students in the classroom is a particular concern for educators because of society's generally accepted poor attitudes towards mathematical success. It is a minority of adults who will remember with fondness their own childhood experiences in mathematics classes.

The overall literature suggests that teacher – related variables are most important to the development of students' attitudes towards learning mathematics. The study will be structured to probe the important school – related determinants of linking or not linking Mathematics, from the point of view of each student. Specific questions will be asked in several areas, including effect of effort for learning mathematics, teachers, and classroom activities.

In addition, the relationship between enjoying mathematics and perceptions of differentiation between enjoyment and usefulness was assessed to confirm earlier research by Aiken (1971), which suggests that of differentiation between usefulness and enjoyment is appropriate in measuring attitudes towards mathematics. Finally, the gender and class level of each student will be recorded since it is likely age and genders are related to perception of influence.

2.4 Overview of Attitudes Development

2.4.1 Attitude Definition

According to Anderson (1985) an attitude is moderately intense emotion that prepares or predisposes an individual to respond consistently in favorable and unfavorable manner when confronted with a particular object. It is therefore, a mental state used to respond psychological construct comprised of cognitive, affective and intention components. Attitudes are also defined as strongly held belief that reflect people's opinions and feelings and can be sometimes manifested in behavior. Chambers and Pitman (1986) have shown that both feelings and information are critical factors in the formation attitudes and those are critical components of understanding.

Barn and Byme (1994) in the argument reveal that attitudes dictate individuals' perception. Reveal that attitudes, behavior and feelings are found b some researcher Christa (2000) to be liked such that people's attitudes and that people's attitudes determine their behaviors towards objects and people meet and influence even the relationships that exist among these with themselves. Attitudes therefore, according to Lord (1997) three elementary components:

(i) The cognitive components

(ii) The feeling components

(iii) The actins r behavioral components

The three components are interrelated; they are always present whenever a person holds attitudes. A more noticeable issue in research into attitudes towards mathematics is that these do not consist of single unitary construct, but rather a large number of sub-constructs all of which contribute in changing proportions towards an individual's attitudes towards Mathematics. Studies have incorporated a range of components in their measures of attitudes to science. These include the perception of students and teacher, anxiety towards Mathematics, attitudes of peers, Attitudes of parents, the nature of classrooms environment, and achievement in Mathematics and fear of failure (Breakwell and Beardsell, 1992).

2.4.2 Attitude Manifestation

From the previous definition it appears that attitudes are not quantifiable they can be detected b indirect methods. Attitudes manifest themselves in different manners. Their manifestations are linked to concepts such as perceptions, personality and

perceptual selectivity. Show the attitudes and beliefs r perceptions. Crawley and Koballa (1994) Stated; Beliefs that an individual holds about the consequences of engaging in the specific behavior within subject effect or person norm help the person form an attitudes towards engaging in the behavior. In an attempt to examine and understand the attitudes of community secondary school students towards mathematics, attitudes manifestation will be discussed with reference to manifestation concepts namely, perception, personality and perceptual selectivity.

2.4.3 Perception

The review of the cognitive psychologists shows that, as we move about the world, we create a model of the world works. That is, we sense the objective of the world, but our sensations map to percepts, and those percepts are provisional, in the same sense that mathematics hypotheses are provisional. As we acquire new information, our percepts shift. Belief and perceptions are not in action. Beliefs are life we do not question or filter our own beliefs. We fare them as they are. They include the values that we have. Perceptions however relate to a method or way of thinking or point of view. It is the filter of any input based on our beliefs.

An important aspect of how we perceive objects or people has to do with what we think they are or should be (Morris, 1973).How Mathematics is perceived depends on what students themselves think mathematics is. So, because students are limited in what they can perceive, they are highly selective in whether they choose to perceive and that which is relevant to them. In this process of filtering, different people will react differently even when they are from the same physical

environment. They would not always have the same experiences, hence perceptions. Attitudes therefore relate to the way we react or act…the way we perform our thinking (perceptions) is what results in our attitudes.

The ability to filter sensory experience is called perceptual selectivity. Perceptual selectivity is influenced by both external and internal factors. External factors relate to stimuli and contexts in which people find themselves interacting while internal factors relate to for example, learning, personality and motivation. It involves active engagement with the most "such that the perceiver constructs it in the most appropriately informative manner" (Oakes et al. 1994).

Sometimes, out of necessity perceptual selectivity takes over and individual see only what they expect and want to see. In a sense the individual pays attention only small parts of stimuli and therefore remains uninformed of those things he does not expect. To influence students' towards mathematics, their perceptual selectivity should be manifested. The perceptual selectivity of mathematics students can therefore be increased by advocating mathematics, which means there should be follow –ups, feedback, and reports on situation in schools y the media and other influential sources.

2.4.4 Attitudes Towards Mathematics

For many years, poor results in Mathematics have been associated with the cognitive than with the affective domain. Attitudes towards mathematics curriculum and teaching have been widely researched; (Evans and Hannula 2006, Mcleod 1992,

Leder, 1987).Attitudes towards mathematics plays a crucial role in the teaching and learning processes of mathematics. It effects students' achievement in mathematics. The teaching method, the support of the structure of the school, the family and the students' attitudes towards school affect the attitudes towards learning mathematics. Usually the way that mathematics is represented in the classroom and perceived by students, even when teachers believe they are presenting it in authentic and context dependent way stands to alienate many students from mathematics,(Barton,2000,Furinghetti and Pekhonen,2002).

Meanwhile, other researchers in their investigation about students' perceptions and attitudes towards science and mathematics have reported the problem dissatisfying interest in this learning area among students (Raat & Derries, 1985, Ornmerod D. W., 1975, De Klerk 1989). What these researchers revealed is the fact that participation in science and mathematics and achievement factors influenced, therefore there is need to investigate these factors in order to explain why students do or do not enroll in mathematics courses.

2.5 Nature of Mathematics

The term "Mathematics" has been interpreted and explained in various was. It is the numerical and calculation parts f man's life and conclusions. It deals with quantitative with problem involving space and form. It also deals with relationship between magnitudes (Mmari, 1973). According to Kilbur Singh Sidhu (1967) and New English definitions, Mathematics is the science measurement, quantity and magnitude. Mathematics in a strict sense is the abstract science which investigate

deductively the implicit the conclusions implicit in the elementary conceptions f spatial and numerical relations. “It has also been defined as the science of numbers and space. Its HINDI or Punjabi name is “Genita” which means science of calculation

2.6 Importance of Mathematics

Mathematics as a formal area of teaching and learning was developed about 5,000 years ago by the Sumerians. They did this at the same time as they developed reading and writing. The subject is a powerful tool for developing the faculty of knowledge and therefore a prerequisite for many other disciplines (Simba, 1999).All sciences require mathematics. The knowledge of mathematical things is almost in born in people. This is one of the easiest sciences because no one’s brain rejects it; whether layman or semi illiterate they know how to count and record.

Mathematics techniques provide very scientific and cheap ways of analyzing and solving various problems that we face in our day to day living. The subject enables people to meditate and to be able to develop a sharp way of thinking as NCTM (1989) puts it forward, that mathematics is reasoning, one cannot do mathematics without reasoning. It enables students to be rational, critical thinkers, engaged in logical processes and conjectures in a variety of ways.

The subject fits in grooves of many subjects. For example there is mathematics in geography, biology and accounting. Mathematics plays a significant role in sciences. Just as the language of true literacy not only specifies and expresses thoughts and possesses of thinking but also creates them in turn, so mathematics does not only

specify, clarify, and make rigorous workable concepts and laws of science, but also certain crucial instances becomes an indispensable constituent of their creation and emergence as well (Bochner, 2007).This plainly entails that mathematics is a fulcrum on which other subjects can rotate and find their being.

2.7 Mathematics Programmes

In most countries, the transition from primary to secondary education is marked by a move away from a unitary mathematics programmes for all students towards a structure which offers a variety of programmes according to the student's abilities, interests or goals. Quadling (1979) has identified four types of mathematics programmes at secondary level

(a) Academic courses: These are usually designed for students who will proceed to university level. These studies tend to present mathematics as an isolated discipline and emphasize theoretical principals and the logical coherence of the subject.

(b) General courses: These courses are followed by students of not more than average ability who have no particular objectives. As more students remain in schools beyond the age compulsory attendance, these courses take one greater importance, for example, they aim to emphasize the relevance of mathematics to the citizen in the modern world.

(c) Technical courses: They are intended to provide the mathematical knowledge needed in particular field of employment. Some of these courses, for example designed for engineers, business or the electronics industry, may have substantial mathematics elements. However, the emphasis is an

application of mathematics to the world of work. Students, who are successful in these courses, may not prefer advance studies in a college or university.

(d) Skill courses: These courses are often taken on part time basis by employees in particular crafts or trades, where training in the basic mathematical skills (calculation, measurement, application of formulas) is offered. The content of the course does not go beyond what a student learned in school but focuses on particular areas of application.

The extent to which a country offers these above mentioned programmes is the function and the role of the secondary education in that society. For instance, a concern of the scope of mathematics programmes that address the needs of broader cross-section of youth was expressed in a recommendation of the Khartoum conference of developing mathematics in Third world Countries which stated:

> "*Mathematics curricula at secondary school level should be relevant to the need of the majority of the students for whom this stage will be terminal. Great attention should be given to the development of appropriate mathematics Curricula for the technical and vocational sectors as for the academic sectors"* (EL TOM 1979:185).

However, to develop a mathematics curriculum that seems to meet the need of children and has relevance to their lives is a very difficult job. It is beset with obstacles. Some these obstacles may be personal ones, such as, interest, ability and attitude towards the subject.

2.8 Mathematics Programmes in Tanzania

Travers (1985) argues that the mathematics programme in the United Republic of Tanzania reflects political and social developments which have taken place in this country since 1950s.Arabic influences, as seen in terms of the Kiswahili language for measures of length, capacity, and time, resulted from the slave traders, ruler or religious missionary whose caravans passed through both coast and interior. The "business mathematics" of the Asian merchant, who set up shops in trading centers, has left a visible imprint on the country's culture.

Mmari (1980) has noted that it could be argued that through the influence of the Asian in East Africa, commercial subjects were introduced in African secondary schools. German colonizers who followed the missionaries established schools to prepare a cadre of African children for colonial services, for working on the plantations, and for serving in houses of business. However, after the First World War, the League of Nations placed Tanzania Mainland (by then Tanganyika) under the British as a Mandate territory, and the language of instruction changed overnight from German to English.

The metric system of measures, introduced by the German was abandoned and replaced by the imperial systematic change of language of instruction and the mathematics curriculum in general, brought about problems to the teachers who were learning the subject as well. Both teachers and students had no choice; therefore they had to assimilate the changes which to the large extent intended to benefit the colonial rulers. With a British system of education there came

preparation for English Examination including “many hours (spent) grappling with problems in journeys in the underground from the tube station X to tube station Y, problems on the life expectancy of the coal miner in Newcastle, and the results of cricket match in a country of Southern England (Mmari,1980).

According to Sichizya (1992) since mid 1960s Tanzania has experienced remarkable changes in its mathematics programmes for students of primary schools, secondary schools and teacher’s colleges. He also maintains that after independence in 1961, Tanzania continued to use traditional mathematics programmmes with British flavor which ceased in 1977. In addition to this programme in schools, the Entebbe programme (modern mathematics) and School Mathematics Project (S.M.P) were introduced and implemented in mid 1960s.

The two programmmes were abandoned in 1975 and instead, a new mathematics programme and syllabi, which had some elements taken from traditional, Entebbe and SMP programmes, were introduced. The programme which is still on use in Tanzania is known as Basic Mathematics for Ordinary Level Secondary Education. The main goal of this new mathematics programme is to produce competent mathematics students who are competent in their respective vocations. This programme emphasizes understanding of a core of mathematics, learns active participation and practical use of mathematics. Though the change of mathematics programmes is an effort to find a programme relevant to the nation, on the other hand may bring, confusion and eventually contribute significantly to the pupils’ poor performance in mathematics.

2.9 Classroom Learning Environment

Generally, classroom learning environment refers to a space or place learners/students and teachers interact with each other and use a variety of tools and information resources in pursuit of learning (Wilson, 1996). The nature of classroom environment and social interactions can make difference in how students learn and achieve their goals. Researchers have reported that the classroom plays an important role in students' cognitive and affective development (Eklund, 1995, Entwhile 1992). Other studies were importance of classroom environment in the teaching and learning process (Fraser Fisher, 1983). They suggested that achievement is improved by working in a preferred classroom environment has physical, social and psychological dimensions how people relate to each other is the first stage to improving it.

2.10 The Mathematics Teacher

There exists n doubt of the role teachers play in what happens in their classroom (Kulbir sing sidhu, 1995). The teachers provide a leadership or guiding role in teaching and learning context and therefore are highly influential. For instance teachers are responsible for the environment and atmosphere that pertains in their classroom. They in a sense determine the ethos of the classroom and set the standards as this is to be accomplished.

2.11 The Student Related Factor

Numerous studies in the area of science,(Anderson, 1991, Wood, 1995, Rukondo, 2006, Leshabari, 1978) have attributed students and perceptions as important

explanatory factors to the level of their performance. Research was conducted to determine the factors pertaining to the student influence attitudes towards Mathematics and other science subjects.

2.12 Knowledge Gap

Despite the fact that there are considerable studies that have been carried out in Tanzania in relation to factors influencing students' attitudes towards learning mathematics in secondary schools in Tanzania, but none of the recent studies have gone a step forward to assess and examine the school factors influencing students' attitudes towards learning mathematics in the community secondary schools in Tanzania. This study therefore strives to fill that gap.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1Introduction

Kothari (2004) defines research methodology as a systematic way to solve the research problem. This chapter discusses the research methodology used in the study. It describes the research design, population and sampling, research instruments which were used and how data were analyzed. Qualitative and Quantitative approaches were both used to obtain information needed by the researcher to derive at the desired conclusion.

3.1 Research Design

It is an overall plan or structure of research which spells out the plan by which data is collected. It also shows where and how data were collected, instruments of data collection and the quality as well as adequacy of data collected. It has three common elements, namely, research area, research population and sampling techniques Survey design was used as it ensured the collection of information from large samples (Saunders et al. 2009)

3.2 The Research Area

Bukoba Municipal council is one of the eight local authorities in Kagera region. Bukoba Municipality is among the eighteen Municipal Councils in the country which are categorized as secondary cities. Bukoba lies between latitudes $1^{o}6'0"$ to $1^{o}8'42"$ south of the equator and longitude $31^{o}16'12"$ to $31^{o}18'54"$ east of Greenwich. It is bordered by Lake Victoria on the east and Bukoba District Council

on the South, West and North. It has a total area of 80 square kilometers whereby 22sq. km of that area covered by water and the remaining 58sq. km is land. The town lies at an altitude of 1150m above sea level.

The area was chosen by the researcher because no any study of this kind has been conducted and reported in the same area. According to the 2012 National Census results are 128,796 people with annual growth rate of 4%. Of the total population, 66,275 are women while 62,521 are men (National Bureau of Statistics, 2012). Bukoba Municipal Council is comprised of fourteen (14) wards with a total of 30 secondary schools of which nineteen (19) are government schools while the rest eleven (11) are privately owned. In addition to this, it was less costful in terms of time and resources as the researcher himself resides and works in Bukoba Municipal Council.

3.3 Population and Sample

The research population refers to the elements of research. The elements which were involved in the study are respondents as people were involved as elements of the study. The research population statement indicated who are the elements and later provided an indicative percentage which was representative of the whole study population directly involved in the study. In this study subject teachers and students were the target population because they were thought to be reliable informants with accurate information which could answer best the questions of the researcher.

Bukoba Municipal Council consists of 16 community secondary schools. Seven schools were selected randomly by which 16 pieces of papers were prepared and

labeled on basis of their names. Seven pieces of papers among the sixteen were picked up as samples. From those schools, students were also selected at random in which the researcher picked up randomly from each class a total of seven students, to make a cumulative total of twenty eight students' respondents. In addition, mathematics teachers from the selected schools were purposely selected because they were the only ones thought to have reliable information in their area of influence.

3.4 Instrumentation

For the purpose of the study, students responded to a combination of five instruments namely interview, questionnaire, focused group discussion, observation and documentary review. Interview tool was used to combine semi-structured and unstructured forms of questions. Questionnaire instrument was applied to help the researcher to gather information from the respondents to find out whether schools provide supportive inputs to influence better learning and teaching mathematics.

A document as another source of information was used to enable the researcher to collect data in which school examination records, school ledger, and log books as well as students' exercise books were referred. Focused grouped discussion was used to assess students' perception towards learning mathematics in the community secondary schools. Attitudes towards mathematics originally targeted at the form one up to form four students. The five instruments comprised of four factors namely, the classroom environment, students' characteristics, teachers' characteristics and attitudes towards mathematics. With observation, the researcher noticed that many

students were not attending mathematics lessons in all the visited schools. In all the visited schools, the researcher found out that students' truancy in mathematics lesson was common and rampant. In one of the visited schools, for example, the mathematics teacher was found by the researcher teaching only eighteen students out of forty who were supposed to be class, one Friday afternoon.

3.5 Validity and Reliability of the Instruments

Validity refers to the quality that a procedure or an instrument (tools) used in the research is accurate, correct, true, meaningful and right (Enon, 1998).The researcher prepared interview guides and questionnaires for trials through triangular (multiple data collection) method. These instruments were pre-tested in one community secondary school two days before the actual day of collecting data.

Reliability refers to the degree of consistency demonstrated in a study (Enon, 1998).Since research and testing depend on specified instruments, so these instruments were pre-tested by the researcher in one community secondary school to find out if the instruments could apply when used by different researchers at the same area and time or by the same researcher at different areas and time.

3.6 Methods of Data Analysis

Bagdan and Biklen (2007) explained that data analysis is a systematic process that involves working with data, organizing them into manageable units, synthesizing them, such for patterns, discovering what is important and what to tell others. The data were collected and analyzed by frequency of responses with simple percentage

technique. This was done by coding the answers into categories and counting the number of responses in different categories. The results were summarized by classes and gender for each of the questions.

3.7 Ethical Consideration

Ethical issues were effectively considered. First, respondents were asked for their formal consent. There after they expressed willingly to participate in the study. Second, they were assured that the information they disclosed could be kept confidential and was solely meant for the purpose of this study.

CHAPTER FOUR

4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter was not in the proposal. It attempts to highlight the findings of the study and can be presented by discussing major qualitative findings and supplementary evidences, interpretation of findings by stressing on statistical tests including level of significance and degrees of freedom, discussion on each hypothesis, and compare the results with the related studies or the literature reviewed.

4.1 Mathematics Teaching and Learning Resources Available

Mathematics teaching and learning resources included mathematics subject teachers, mathematics books, and mathematics blackboard teaching-learning instruments. These were traced through schools' documentary review and interview with mathematics teachers and students.

From Table 4.1 it is clear that all schools had relative few mathematics books. Also there is a shortage of mathematics teachers .While Bukoba Secondary had only one university graduate, there were relative very few mathematics teachers in other schools and majority were Diploma holders. Though Table 4.1 reveals the difference in numbers of teaching and learning resources, it is still difficult to determine whether the same can and thus solely explain mathematics performance taking into account the mobility of students and hiring of the available resources.

Though Table 4.1 reveals the difference in numbers of teaching and learning resources, it is still difficult to determine whether the same can and thus solely

explain mathematics performance taking into account the mobility of students and hiring of the available resources. The scenario of teachers' educational level exerts great influence on schools with poor performance where only one of the schools owns at least one mathematics teacher with a university degree. The Head of Mathematics Department at Bukoba Secondary School had this to say:

> *"There are no enough teachers a few who are here are mainly Diploma holders who use teacher centered method to teach the subject. Most of the tests and assignments are written on the blackboard for the students to read and respond".*

Table 4.1: Availability of Mathematics Teaching and Learning Resources

School	**Maths Teaching Leaning Resources availability**						
	Maths Books availability				**Math teachers present**		**Maths Instruments available**
	Book 1	**Book 2**	**Book 3**	**Book 4**	**University Graduates**	**College Diploma holders**	
Bukoba	30	30	20	20	1	2	11
Kashai	20	20	20	20	0	1	8
Rumuli	20	20	15	10	0	0	9
Kagemu	30	20	20	15	0	1	8
Hamugembe	20	20	15	12	0	1	7
Mugeza	20	15	15	10	0	1	7
Bilele	20	20	15	15	0	1	8

Source: School records and Respondents

A combination of the shortage of teachers and low academic qualifications of school teachers greatly affect student's performance .Bukoba Secondary School teachers who were reported to be using poor teaching methods due to low academic qualifications of teachers makes them unable to use advance methods such as group

work which involves students. These teachers have subject inadequate knowledge and pedagogical skills that are required to boost mathematics teaching. This goes hand in hand with the views of Mosha (2004) who maintains that teacher should be competent in both subject content and professional skills in order to deliver good information to students. It is therefore imperative that, a teacher's qualification has a direct impact with regards to students' performance in mathematics.

4.2 Students' Attitudes Towards Mathematics

Descriptive statistics were run on all attitude scale items. Negative worded items were reversed to obtain attitude scores, where a high score indicated a more positive attitude and a low score indicated a more negative attitude. The median score (110) was taken as a cut-off point separating positive from negative attitude. Table 4.2 below indicates the results.

Table 4.2: Students attitudes towards Mathematics

Attitude	Frequency	Percent
Negative attitude	110	55
Positive attitude	90	45
Total	200	100

Source: Field Data from Respondents

Table 4.2 indicates that many students, about 55% (110) had general negative attitudes towards mathematics as oppose to the 45 % (90) that had general positive attitudes towards mathematics. For further examining students attitudes towards mathematics in details, the findings were organized according to the subscales,

showing the percentage of respondents who agreed or disagreed on attitude statements. Strongly agree and agree responses were put together to form a collective percentage, and likewise strongly disagree and disagree responses. Table 4.3 presents the students affect towards mathematics.

Table 4.3: Students Affect Towards Mathematics

Item	**Percentage of strongly agree or agree**	**Percentage of strongly disagree or disagree**
I like mathematics	85	3.4
I feel insecure when I have to do mathematics	19.5	62.3
I get frustrated going over mathematical problem in class	21.6	64.5
I am under stress during mathematics class	16.7	68.9
I enjoy studying mathematics subject	11.6	69.4
I am scared by mathematics	29.5	54.5

Source: Field Data from Respondents

Table 4.3 indicates that majority of students almost 85 % like mathematics. However about 19.5 % were scared of mathematics, and 21.5% got frustrated when they go over mathematical problems in the class. There is a difference of about 30% between those who said they like mathematics and those who are not scared by mathematics.

The difference might be accounted for by the actual or perceived difficulty of the subject. Table 4.4 indicates the students' responses about the perceived cognitive aspect of attitude.

Table 4.4: Perceived Intellectual Knowledge and Skills about Mathematics

I tem	Percentage of strongly agree or agree	Percentage of strongly disagree or disagree
I have trouble e of understanding mathematics	32.6	47.8
I have no idea of what is going on in mathematics	67.2	12.2
I make a lot of mathematical errors during mathematical tests and exams	35	37.2
I can learn mathematics	9.1	81.1
I understand mathematics formulas	12.2	74.4
I find it difficult to understand mathematical concepts	54.6	21.1

Source: Field Data from Respondents

Table 4.4 indicates that the perception of students' intellectual knowledge and skills regarding mathematics was negative to large extent. Most students 81% said they cannot learn mathematics, 74.4% do not understand mathematics formulas, and 67.2 % had no idea of what was going on in mathematics. This might explain why 85% of the respondents said they like mathematics but only 54% are not scared with mathematics. Table 4.5 indicates results on students' attitude about the usefulness of mathematics.

Table 4.5: Perceived Usefulness of Mathematics in Personal and Professional Life

I tem	%Strongly agree or agree	% Strongly disagree or disagree
Mathematics is worthless	73.3	13.9
Mathematics skill will make me more employable	13.3	75
I use mathematics in my everyday life	13.9	75.5
Mathematics conclusion are rarely presented in everyday life	35	50.5
Mathematics is irrelevant in my life	19.4	62.2
Mathematics should be compulsory subject to all students	23.9	63.4
I will have no application for mathematics in the profession of my interest	20	67.3
Mathematics is not useful in the profession of my interest	76.7	15
Mathematical thinking is not applicable in my life	17.8	71.1

Source: Field data from respondents, 2012

According to Table 4.5 it is obvious that students' attitude towards the usefulness of mathematics is negative. Most respondents (73.3%) reported that mathematics is worthless, and about 75% of respondents said that they were not using mathematics in their everyday life. However, about 63% suggested that mathematics should be

compulsory subject to all students. It is not clear as to why such big number of students would like mathematics and suggest it to be compulsory despite the fact that they consider it worthless. It is somehow obscure to learn that, though 73.3% of respondents considered mathematics worthless about 71% said the subject was applicable in their lives. This paradox of attitude towards mathematics might be interpreted that students with negative attitude towards mathematics were associated with other factors such as student being forced to see mathematics as worthless because they themselves are unable to cope with the subject due to toughness of the same.

4.3 Students Mathematics Performance

Students 'scores in mock mathematics examination were categorized into three. The first category was below 35 marks, which means that students who scored such marks entail failure. This is as per definition of the National examination Council of Tanzania, where such scores are awarded 'F' Grade. Table 4.6 indicates students' general mathematics performance.

Table 4.6: Students Mock Mathematics Score-year 2012

Scored marks	Frequency	Percent
<=(Fail)	74	37.1
35- 60 (good)	80	40.2
60.1+(very good)	46	23.7
Total	200	100

Source: Calculated from Schools' Data**,** 2012

Table 4.6 portrays that students (40.2%) had relative good performance in mathematics. Only 23.7 % of students had relative very good performance, while 37. 1 % of students failed in mathematics mock examination.

4.4 Relationship Between Students' Attitude Towards Mathematics and Students' Scores in Mathematics

The relationship between students' attitude towards mathematics and their performance in mathematics was investigated using Pearson product- moment correlation coefficient. Results indicates that there was a significant but moderate positive correlation between the two variables (=.33**, n==200, p=0.01), with high scores n attitude scale associated with high scores in mathematics. The coefficient of termination of attitude was 0.1089 .Thus attitude towards mathematics helps to explain nearly 11 percent of the variance in the respondents' scores on the mathematics performance.

These findings go hand in hand with other findings as synthesized by Bloom(1976), According to this theories, relationship between attitudes towards mathematics performance in mathematics among grade 12 in many countries around the world have reported similar findings. For example, r=43 in United States, r=29 in England, r=28 in West Germany, r= 30 in Belgium, and r=36 in Sweden (Bloom, 1976). Thus the theory of school learning is not only supported by these findings, but also can be applied to improve mathematics in Tanzania schools.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter involves the summary of the study, conclusions, and recommendations for educators and researchers. There are also suggested areas for further studies.

5.1Summary of the Study

This was a study about school factors influencing students' attitudes towards learning mathematics in the community secondary schools. Specifically the study examined factors affecting students' attitudes towards mathematics, mathematics teaching and learning resources available, and attitudes towards mathematics with sex, students' mathematics performance. In the same token, the study focused on difference in mathematics performance with students' attitudes towards mathematics and finally the relationship between students' attitude towards mathematics and students' score in mathematics.

In addition, Form Four Mock Examination results of mathematics were used to represent mathematics performance. The target population was Form One to Form Four students as well as teachers making a total of 204 respondents from Bukoba Municipality. The sample schools for this study comprised of seven schools such as Bukoba, Kashai, Rumuli, Hamugembe, Kagemu, Mugeza, and Bilele.

5.2 Conclusion of the Study

In regard to the findings of the study of comparative analysis of selected correlates of mathematics performance in community secondary schools, the following

conclusions can be retrieved.

5.2.1Mathematics Teaching and Learning Resources Availability

In all selected schools, it was found that there were very few mathematics books. With regards to in terms of mathematics instruments such as Blackboard, rulers, protector, setsquare, dividers, compass, Graph board, Geometric models and mathematics laboratory, there was no significant difference. Shortage of teachers was common problem to all schools. Schools under investigation experience the shortage of mathematics teaching and learning resources irrespective of school category.

5.2.2 Student Attitudes Towards Mathematics

Generally speaking, there were fluctuations in the respondents' attitudes towards mathematics .While some of the students i.e. about 52 %(110) indicated positive attitudes towards mathematics. Fluctuations of attitudes towards mathematics took place when the students who considered mathematics as worthless, also said the subject was applicable in their lives. It was learned that students were manipulated to construe mathematics as worthless simply because of weak quality of instruction of the subject. Sometimes the failure to have control over the subject leads them to consider it worthless although they knew the subject is vital to their lives.

5.2.3 Difference in Students' Attitudes towards Mathematics Category

Absence of statistical significant in difference towards mathematics in community secondary schools was evident. This reveals that any difference was a result of pure

chance and thus student's attitudes towards mathematics had no influence on any difference in mathematics performance as far as school category is concerned.

5.2.4Students' Perception Towards Learning Mathematics

The range of responses from the findings indicates individual perceptions of different students in each class and category. Teachers, class activities, subject contents, amount of work and some topic learned were mentioned. Most frequently, there is no consistent pattern across classes on sex. The teacher is mentioned most frequently 130 (65%), and more often by females than males. Class activities were mentioned as an important key in learning mathematics.

5.2.5Students Mathematics Performance

Students' general performance in mathematics mock and national examinations was generally poor. Poor performance in mock and national examinations followed by the tread of performance in the sample schools were attributed to test items construction which might be deferent between the two examinations.

5.2.6Difference in Performance with School Category

There was no significant difference in mathematics performance between public and private secondary school. Therefore, school category does not influence mathematics performance unless other factors such as availability of qualified teachers and teaching and learning materials are supplemented to students, attitude.

5.2.7Difference in Mathematics Performance with Sex

There was a significant difference in mathematics performance between male and female students .Such strong difference was evident in other previous studies, the observation here is that sex being a female or a male inculcated any difference in mathematics performance ,but rather other variables were such as attitudes towards mathematics skills and previous achievement that the student had, sex –role stereo typing and quality of instruction including students interaction with teaching learning materials .

5.2.8 Difference in Mathematics performance with Students' Attitudes Towards Mathematics

Students with positive attitude towards mathematics performed much better in mathematics than those with negative attitude towards mathematics .It was concluded that despite the fact that attitude towards mathematics is a correlate of mathematics performance, it was not the only sufficient variable for explaining mathematics performance .

5.2.9 Relationship between Students' Attitudes Towards Mathematics and Student, Performance in Mathematics

There was a significant moderate positive correlation between students' attitudes towards mathematics and students' performance in mathematics. From this perspective it was concluded that although students' attitudes towards mathematics is a correlate of mathematics performance, it is not the only sufficient correlate of

mathematics performance.

5.2.10 Predicting Mathematics performance from School Category, sex and Students' Attitude towards Mathematics

The model for this study which included variables such as school category, sex and students' attitudes towards mathematics depicted 18.7% of variance in mathematics performance. It was concluded that in the module, sex made a largest contribution followed by attitude towards mathematics. Attention should be placed on student's cognitive behavior, affective characteristics and quality of instruction, as far as the theory of school learning is concern.

5.3 Recommendations

In view of the findings of this study, the following are the major recommendations:

1. Since the present study was limited to community secondary schools similar studies could be carried out to cover both Secondary Schools as well as other sectors of education .This present study might be a pointer in such directions.
2. It was also discovered that, there is need to develop a love for Mathematics through the setting up "Mathematics Club" in every secondary school. Its aims should be as follows:
    i. to develop interest for Mathematics
    ii. to help students develop positive attitude towards Mathematics
    iii. to learn the "history of Mathematics performance' by sharing its slow and painful development from ancient times to the present

iv. to further stress its importance to students who will go on to higher institutions of learning for mathematics related courses.

3. Due to the fact that there was a significant difference in mathematics performance between students with positive attitude towards mathematics and those with negative attitude towards mathematics, educators must nurture positive attitude towards mathematics among students in order to improve their performance in mathematics.

4. Students should be aware of the relationship that exists between their attitudes and their performance in mathematics, as this might lead them to positive attitudes and ultimately to good performance in mathematics.

5. Universities and other Educational Institutions in Tanzania should develop programs that elevate students' attitudes towards mathematics from negative to positive together with teachers for the sake of improving the student's mathematics performance. Since the instruments used in this study have been constructed and used for the first time in Tanzania, more studies of this sort are carried out to boost these instruments in terms of validation, and hence make them useful within and beyond Tanzania.

6. There is a need to conduct more researches in order to explore instructional styles, students' thinking patterns and dynamics learning styles, the difference between the anticipated results and the actual practicalities in teaching and learning mathematics in the classroom, as well as the relationship between mathematics items analysis and performance of the same.

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APPENDIX

APPENDIX 'A'

QUESTIONNAIRE TO THE STUDENTS

Sex: Male ……. Female……..

Name of School……

Ward:…….

Age……..

Education level: put a tick

(a) Form one ( ) (b) Form two ( ) (c) Form three ( ) (d) Form four ( )

Please circle on subject that you think many teachers teach at your school in your class? Mathematics, Physics, Chemistry, Biology, History, Geography, History, Civics, Kiswahili, English.

State briefly, why do you like or dislike learning mathematics subject?

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……..…….…….

From your own experience in which form do you find mathematics subject to be easier or difficult than other forms and why?

How far are you comfortable with the teachers' support in learning mathematics?

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In your own view or experience explain how the school management facilitates you to learn Mathematics

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1. Is your mathematics teacher good instructor /facilitator in learning mathematics YES/NO
2. No, why?

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13. At what time is Mathematics subject taught? Circle one of the following: in the morning session, after long break, afternoon session

THANK YOU FOR YOUR COOPERATION

APPENDIX'B'

QUESTIONNAIRE TO THE TEACHERS

1. Sex: Male …… Female…….
2. Name of School…….…….
3. Ward……..…….
4. Age…….
5. Education level…….
6. Does the interaction with your student make students like Mathematics?

   YES/NO……
7. If No why ……..
8. How many Mathematics periods do you teach per week?

……

9. What is your teaching experience in years?

……

10. Does the school have enough teaching and learning resources and facilities?

    YES/NO……..

    Put a tick (√) on the answer of your choice

	Very adequate	Adequate	Inadequate
Text books			
Water supply			
Computers			
Laboratories			
Chairs and desks			
Mathematical equipments			

11. How well this School performs in Mathematics Subject in the National Examinations?

Circle one,

(a) Excellently (b) Very good (c) (Good (d) Poorly

12. In your opinion, explain how Mathematics curriculum Implementation influences students' attitudes towards learning Mathematics

……

……...…….

3. As a part of School Management do you make efforts to help your students acquire Mathematics learning and teaching Material:0

4. If YES, how? ……

5. Are the students you teach qualify for Post – Ordinary level education? YES /NO.

6. If No, why?

7. Can students borrow the Mathematics text books and take them home? Yes/No……

8. Do you have a space in your school were Students can learn and play mathematics games outside of lesson time? YES/NO……

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Approximately, how many students attend Mathematics subject regularly? (circle one)

Less than 25%, less than 50% more than 50% above 75%

9. How does your School assist to facilitate learning and teaching materials for mathematics Subject?

THANK YOU FOR YOUR COOPERATION