

**RELATIONSHIP BETWEEN STUDENTS ATTITUDES TOWARDS
MATHEMATICS VERSUS THEIR PERFORMANCE: A CASE
STUDY OF LELWAK SECONDARY SCHOOL,
NANDI SOUTH DISTRICT**

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**A RESEARCH REPORT PRESENTED TO THE INSTITUTE OF OPEN
AND DISTANCE LEARNING IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF DEGREE OF
BACHELOR OF EDUCATION IN KAMPALA
INTERNATIONAL UNIVERSITY.**

NOVEMBER 2009

DECLARATION

I, **PAULINE JESEREM**, Admission No. BED/13556/61/DF hereby declare that this special study paper is my own not duplicate of similar published work of any scholar for academic purpose as partial requirement of any college or otherwise

Signed:  _____

Date: 19/08/2009.

APPROVAL

This research report has been submitted for examination with my approval as the candidate university supervisor.

Signed:  _____

Date: 21/06/19 _____

DEDICATION

I take this opportunity to dedicate this work to all my husband, children and parents who supported me throughout my research work.

ACKNOWLEDGEMENT

I take this opportunity to convey my sincere appreciation to all my group members. At the same time, many thanks goes to my supervisor for offering unrelenting guidance, constructive criticism and encouragement in writing this dissertation.

Finally, my gratitude goes to my husband for a moral and financial support she has been giving to me towards the production of this dissertation. I will not forget my children who have always loved me even during my busiest times.

Abstract

The teaching of mathematics has been viewed classically at all onsets and specific patterns of work teaching methodologies versus the consequent content analysis have been invaluablely developed at various research phases. The study looks critically at mathematics as a subject and its relative relevance within the performance environment and it entrenches the whole concept of the same to further evaluation.

Study after study has at all time given us concrete evidence of the concept of teaching mathematics at higher levels, and the immediate impacts of this on those accessing and learning it. The process give us a overview of mathematical performance versus several external factors and in the end it points out clearly the overall trend of mathematics perception at various levels of higher mathematics studies.

It will be evidently concluded phase after phase that mathematics appears more complex, difficult to study and above all, very unfriendly to those learning it. Hence with comparative perception discussed throughout the text, the overall result provides an end to end understanding that mathematics and performance have a great coherence.

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CHAPTER ONE

1.0 INTRODUCTION

The research was undertaken to illustrate the background and setting, statement of the problem, objectives of the study, limitations of the study, basic assumptions, and definitions of the terms and significance of the problem.

1.1 Background and setting

Attitude played a major role in all particular developments. In attitude reference, a two way found a comparative understanding of attitudes which either hindered or led to growth and development. In view of this, a notable transformation of Japan's state from it low economic growth a considerable level of high technology suggested and supported this view of change of attitude (Musvosvi, 1998). He also suggested a success formula-ASK where

A	S	K
Attitude	Skills	Knowledge
90%	5%	5%

This formula suggested that a person's attitude contributes 90% his/her success on failure depending on whether the attitude is positive or negative. The skills a person has contributed 5% that person's success. Person's knowledge also contributes 5% of his/her success. From above information it becomes evidenced therefore that, the attitude of the learner towards Mathematics affected his or a performance in the subject.

Secondary mathematics aimed at producing a person who is numerate, orderly, logical, accurate and precise in thought` (Secondary mathematic teachers hand book (2006).On the values of mathematics Baxton 1984 assets:

Mathematic is the gate and the key of science.....
Neglect of mathematic works injury of all knowledge
Since he who is ignorant of it cannot view the other science
Or things of the world.....p 214

It was hence clear that students needed mathematics in their private life, working life, socio – economic and political life of the country of which they are citizens Cockroft (1982). Consequently, all indications showed that each student gained insightful skills in mathematics. They at the same time appreciated the role mathematic had played and will continue to play both in the development of the science and technology and above all made aware that mathematics provide a powerful means of communication Kiragu (1988). To this end Calileo in Kiragu (1988) Observed:

That vast book which will stand forever before our eyes,
I mean the universe, cannot be read until we have learned
that language, it is written in mathematical
language without which is humanly impossible to
comprehend a single
word (P.4).

Mathematic remained a strategic subject in the development of science and technology and citizens of any country should attain a reasonable level of mathematic literacy. If adequate level of scientific and technological development are to be achieved.

Mathematic is also a fundamental in the study of the physical science and engineering of all types. It is used in the medicine and biological science, geography, economics business and management among others MOEST careers Guide book for schools (2007). Mathematics plays an important Part in character building, boosting self esteem and providing opportunities for developing curiosity and creativity in the present world of technology, it is actually becoming difficult to live a normal life without use of Mathematics of some kind Cockcroft (1998) It perhaps, on the realization of the importance of Mathematics that the Kenyan government, upon attaining her independence in 1963, made Mathematics a compulsory subject both at Primary and Secondary school levels (KIE, 1979).

While most people including parents, teachers and pupils recognized the essential role of Mathematics in everyday life, the subject is perhaps the most disliked subject taught in schools. It is also the most poorly performed subject in the curriculum. The problem is more critical at secondary school land where according to the statistics of the Kenya National Examination Council (KNEC), the majority of the candidates obtain a mark of less than 15% each year. It also lowers the performance of other subjects where Mathematics concepts are applied for instance Chemistry and Physics Indimuli (2003).

Table I.1 shows how the performance in KCSE Mathematics compared with other Science subjects in the year 2004 and 2005.

The education Act cap 211 lays emphasis on the responsibility of the Ministry of Education to monitor the effectiveness of schools in the provision of quality education.

The Commonwealth secretariat (1993) defines the effectiveness to a school in terms of the extent to which the school achieves objectives and goals of education. One of the goals of teaching mathematics is for schools to produce enough people with the necessary skills to meet the country's manpower needs, secondary school Mathematics teachers hand book (2006.) The poor performance in Mathematics at secondary level may be an indicator that the national goal is not adequately being realized. Kigotho (2007) asserts.

"Africa may fail to meet economic development goals due to
low academic achievement in Science and Mathematics.

Table 1.1 Performance in KCSE Mathematics National level compared with other Science Subjects.

Subjects	Year	Maximum marks	Mean	Percentage mean score
Mathematic	2004	200	37.20	18.6
	2005	200	31.91	15.96
Physics	2004	190	19.0	10.0
	2005	190	19.0	10.0
Biology	2004	160	49.07	30.67
	2005	160	41.59	25.99

Sources KCSE EXAMINATION Report 2005

The ministry of education science and technology (MOEST) delegated the responsibility of monitoring the effectiveness of school to the quality assurance office (QASO) section. The education act empowered the QASO with authority to:

1. Prescribe the standards with the regard to the number and qualification of staff, the size of the classroom and the expenditure on the education materials.

2. Provide for preparation or approval of curriculum, syllabus
Books and other education materials.
3. Prescribe the standards for the health and safety of students
and for the satisfactory environment education for
education

(Education Act Cap 211 p 14).

The interpretation of the Act according to this study is that the prescribed standards by the ministry confirmed that a school must have had appropriate education. The QASO ensured that the input remained available in sufficient quantities and qualities to facilitate efficiency in learning Induli (2003). The commonwealth secretariat (1993) defined efficiency as measure of extent to which the inputs produce the expected outputs in a school setting. QASO made regular visits to schools to offer guidelines and advisory services to teachers in areas of curriculum management and implementation. QASO looked at the aspects of learning resources, learning environment and the results of the previous years but could not get time to look at the learners views concerning specific subjects.

The government of Kenya through MOEST and the government of Japan through Jica sponsored Smasse project. The objective of the project was to strengthen Mathematics and Science in Secondary schools. The phase I of smasses project was started in July 1998 and piloted in nine districts, In May 2003 phase II was launched to cover the whole country. MOEST organized inset for serving teachers which is carried out for two weeks annually during school holiday. The project identified several problems but only address the following:

1. The poor attitude of teachers and stakeholders.
2. Inappropriate teaching methods and approach.
3. Poor content mastery by the teachers.

4. Poor utilizations and distributed of school resources.

5. Inadequate supervision/guidance from MOEST.

In spite of all these efforts students still performed poorly for example Lelwak secondary school results of 2006 were as follows 2.6% attain B+, with no grade A.11% had C and above, and 37% obtain E. 37% of the students meant that they only wrote their names only on the answer sheets. These phenomenal performance encouraged the researcher to look at relationship between students attitude towards mathematics and their performance.

TABLE II

Lelwak secondary school KCSE mean grade in mathematics (2002/06)

Year	2002	2003	2004	2005	2006
Mean score	3.13	3.42	3.19	2.377	2.672
Mean grade	D	D	D	D-	D

1.2 STATEMENT OF THE PROBLEM

Why the poor performance in mathematics? It was started that the question had been asked more than million times. Attempts were made to answer this question but the answers given appeared not to have helped because students continued to perform badly in mathematics. In this regard, there was a need to know the contributing reasons for poor performance and eventually find solutions for this problem.

Poor performance caused distress in all the stakeholders including the government who invested a lot in terms of payment of services reentered in teaching the learners.

The parents also got disappointed for the education investment made on their children, where the end result appeared more abstract, with a poor show of results. At the same time, the plight of women were again demonstrated due to amount spent to pay for private tuition and bridging courses. Students spent a lot of time in learning mathematic with no impressive results in their final papers. This demonstrated the diminished esteem and confidence in students of mathematics. Poor performances resultantly demoralized the staff due to the unimpressive returns, noting the huge time spent training the candidates. MOEST promoted teachers depending on performance (T.S.C secular 127 21st Dec.2006).

In unique cases of performance, a noticeable performance drop is weighed on the respective teacher due to a professional believe of teacher influence on the eventual performance of students. Hence the handling process remained at the hands of the trainer. Induli (2003). Eshewani (1993, p172) quoted one teacher who said "Mathematicians are the worst public relation officers when it came to their subjects". In a major understanding potential, the students' attitudes influence dhis/her achievement in the mathematics.

Table 1.3 shows K.C.S.E Results in mathematics (Smasse 2004)

KCSE NATIONAL MATHEMATIC RESULTS OVER 3 YEARS

TABLE 111

YEAR	TOTAL	GRADE A	GRADE E
2000	178608	2259=1.2%	71592=40%
2001	192589	3252=1.6%	75421=39%
2002	195674	4996=3.5%	77013=39%

1.3 OBJECTIVES OF THE STUDY

General: The study was aimed at determining the relationship between students' attitude and their performance in mathematics in Lelwak Secondary School

Specific: The study sought to:

1. Determine the profile of the respondent as to
 - a) Socio-demographic data
 - b) Age
 - c) Gender
 - d) Academic level
 - e) Entry behaviour
2. Determined the level of performance of students in mathematics in Lelwak secondary school in internal evaluation
3. Establish the different attitudes of the respondents towards mathematics.
4. Determined if there were significant relationships between the students' attitude and their performance in mathematics.

1.4 SCOPE AND LIMITATION OF STUDY

The study covered mathematics teachers and forms two, form three and form four students of 2008 of Lelwak secondary school. The independent variable was attitude of the students towards mathematics while the dependent variable was the performance of students in mathematics.

The study limited its scope to students towards the subject although there were other factors influencing performance for instance students level of intelligence, environmental factors such as adequacy of learning, resources and teacher related factor such as mastery of the subject matter.

The problem investigated was a nationwide problem experienced in schools. However, it was not possible to carry out a large scale survey requiring large sample of schools due to financial constraints and time. The study therefore was limited to Lelwak Secondary School.

1.5 THEORETICAL FRAMEWORK

This study was based on the theory of social learning of Bandura (1963) that states that learning takes place by limitation. People acquired behaviour by observing and imitating directly the activities of those around them. People who associate with the students helped them to form an attitude (Judith et al (1994). Human infant is born without any concept of themselves, any attitude, any attitude or value system, Mead (1934) and Gergen 1972 quoted in Maritim (1986).

Attitude of students is influenced by their peers. The peer group has positive attitude towards mathematics, they spent their time learning, solving problems together and got good results and the good performance motivated them to continue working for good results. On the contrary, any re-direction from the peers resulted negatively in

their environment. This explained an overall trend in performance maintenance as well as overall goal setup.

Acquisition of any attitude also depended on the teachers' expectation. The teacher's expectation of s good results from the learners is a result of general motivation of the said student by imparting aspects of interest acquisition. The vice versa remained absolutely true, as the teacher's view in any of the directions influenced the overall trend in the grade.

Expectation of the parents also influenced the attitude of the students towards mathematics. A number of parents expressed fear over the difficulty mathematics was to them, and consequently controlled the eventual understanding of the same by the students.

Attitude of the student was also influenced by what they watched (Bandura 1963). Displayed poor results of the previous years demoralized the students. They developed a negative attitude about the subject that it is hard subject. They did not have an incentive to do assignments because they thought it was a waste of time. Observational learning led to development of different cultures in different environments. Schools, which performed well in mathematics, displayed good results on notice boards. The student got psyche and energies for good results and they achieved, while the schools who performed poorly and displayed poor results made the students to withdraw from working hence poor results.

1.6 SIGNIFICANCE OF THE PROBLEM

The findings shed light on the need of the learners of the learners to change attitudes in order to improve their performance in mathematics.

The findings gave the teacher some insight as to why some students do not perform well mathematically. This got a long way to assist them adopt strategies that enabled positive attitude towards mathematics.

The findings guided the parents to correct general perception and attitude about mathematics, which were passed onto their children.

District supervisor enable the use of finding to develop and produce guide to foster development of positive attitude towards learning mathematics.

The findings of this study was necessary because the government used them to improve learning of mathematics. This facilitated the fulfillment of the vision of becoming an industrialized nation in the year 2030.

Achieved the long term goal, our education system was geared towards improving performance in mathematics, which is the subject to entry into technical engineering courses. Eshiwani (1993) raised an issue with the school for failing to adequately provide the needed manpower for scientific and technological development.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter reviewed literature related to students' attitude and the performance attitude of the students towards mathematics. Student teachers relationship was an important variable, which significantly influenced attitude and motivation to learn, Lewis and Eddy (1996). Good relationship between teachers and the learner led to positive attitude towards learning of mathematics.

Fanacter (1984, page 19) said:

“Attitudes are contagious. A teacher with a liking for mathematics unconsciously convey this liking, in his teaching style and infect children with a similar liking.

Indicated that students' attitude is acquired from the environment.

Copal Rao (1973) in a survey on the subject preference in the secondary school revealed that boys placed mathematics higher up the scale than did girls. He however made no attempt to find out possible factors that could be influencing the nature of the attitude boys and girls have towards mathematics.

This study intended to fill the gap. Gabrielle (1993) in a study of attitude among the German students found a continuing gender difference in interest in mathematics, achievement and mathematics career choice. These findings where supported by Eshiwani (1975), Mwangi (1983) and Ogoma's (1987). Study in Kenya which found that boys attitude mathematics was superiour to those of girls. Whereas the above studies pointed to more negative feelings towards mathematics among girls, evidence of girl's possession or similar attitude to those of boys towards mathematics was also available. Ones such evidence was from the first

international study of mathematic achievement (By the international Association for the evaluation of educational achievement, hereafter referred to as IEA, 1964) According to the results of the survey, although boys in other countries showed more interest in mathematics than girls, a sample of girls in England and France showed a high level of interest than boys. This led to the girls' greater achievement in mathematics. The second evident is provided by Griffth (1974) who conducted an inquiry at primary school level into students' attitude towards mathematics. His finding showed no difference in boys and girls attitude towards mathematics.

A third evidence was provided by Edward (1973) who found no difference in the attitude of male and female college students towards mathematics. His study was done in the United States. Atkinson (1979) study on factors influencing a black college freshmen was the fourth evidence. His study was on attitude in general. According to Atkinson, sex of student was not related to their attitudes.

These studies compared gender and attitude but still majority of boys did not do well in mathematics hence there was need to identify their attitude towards mathematics in Lelwak secondary school.

Parents had different expectations of their sons and daughters. Daughters were brought up for female roles such as child-rearing while sons have a whole working life to devote to career building. Parents believed that female did not have qualities of independence, initiative and assertiveness Macoby (1970, in commonwealth, Orodho(1990)Haffman (1977).Consequently, boys got much time and independence than girls. As a result, boys accessed more opportunity to develop self-confidence, particularly the believe that they can cope failure and handle unexpected problems, a belief that is necessary in learning mathematics (Block, 1973, 1983).

In a study of wealthy mostly high school students, Paulsen and Johnstone (1983) in Beal (1994) found that girls scored as highly as boys in mathematic skills test. They attributed the pattern of the results to the high expectation of girl's parents. They also argued that the high parental expectation of girls help the girls to discount messages about mathematics being unfeminine. Their research was an indication that girls' achievement in mathematics could be equally high if parental expectation could be high. This study intended to investigate the relationship of the attitude of students towards mathematics and achievement. Brookoner and Gootlieb(1964) in Maritim (1986) assert:

If the child perceives that they are unable to learn
Mathematics... this self-concept of their ability
Became functionally limiting factor in their mathematics
Achievement (pp19)

Andrew in Brandt (1987) quoted in Wekesa (1993) found that in high achieving school characterized by high expectation, scores in mathematic per student increased over the period of study. In another study, Edmonds (1979) in Wekesa (1993) revealed that climate of high expectation in which teachers believed and demonstrated that all students could attain mastery of the essential school skills correlated with students' success. However, low achieving school teachers tended to be highly selective in choosing students to recite and were more likely to ask questions of students whom they predicted knew the answer. This indicated that the teachers expectation influence the attitude of students towards mathematics. The study was designed to investigate the relationship between teachers' expectation and teachers' attitude towards mathematics, but this study was to investigate the relationship between the student attitude towards mathematics and achievement on the same subject.

According to Moon and Mayes (1994), the membership and adherence to the values of a particular group made a difference to the school attainment and involvement of students. A student whose friend worked hard and had the teachers' values is likely to work hard and be tuned into the teachers' values.

Beal(1994) found that children tend to adhere to the peer group expectation if they had to fit in with their peers. Fennema and Leder(1990)observed that peer group acted as an important reference for childhood and adolescence socialization and further perpetuated sex-role differentiation through gender patterns, subject preference and career intention. Chebi(1997) gave an example of a form three girl who used to get D's in mathematics due to peer influence but later after counseling, worked hard and got grade A in final examination. Karanja (1996)confirm that

“ If you think the subject is hard, it became hard, but if you
are positive about it, became simple(p(19-20)

2.1 ATTITUDE AND PERFORMANCE

Attitude affected achievement and achievement conversely affected attitude (Ogoma1987).Neal (1969) referred to this relationship to as dynamic interaction between feeling and behavior as observed in the performance. Gernstein (1964) reveled that experienced feeling lead to particular self image which in turn influenced the pupils expectation of future performance Ogoma (1987) while conducting a study on attitude and achievement in mathematics among the standard seven pupils in Nairobi Primary school found that attitude affected achievement. This study was to determine the relationship between the attitude and the performance (achievement) in Lelwak boys' secondary school.

Brown and Abell (1965) in Aiken (1970) in a study of correlation between attitudes towards a subject and achievement found that the correlation was higher for mathematics than for spelling, reading or languages. This finding was supported by those of Alpers et al (1983).

At college level, Harrington (1960) in Ogoma (1987) got a significant relationship between attitude and performance in college mathematic course. The selection of mathematic courses verses no mathematic courses were significantly related to attitude. In Kenya, studies by Eshiwani(1974,1975) Sheik (1977) and Kibansa (1980) in Eshiwani(1985), Mwangi(1983) and Ogoma (1987) all revealed that attitude were related to achievement in mathematics.

2.2 Summary .

The literature revealed that performance in mathematic carried heavy reliance on attitude. It was also evident that they were factors which influenced attitude like, parents' teachers' and peers' expectation. This study only considered the relationship between attitude of student towards mathematics and their achievement.

CHAPTER THREE

METHODOLOGY

3.0 RESEARCH DESIGN

The study employed the descriptive method to determine the relationship between students' attitudes towards mathematics and their performance. The independent variable which was the students' attitude towards mathematics was identified by administering questionnaires. The information on the dependent variable was collected from records of mathematics exams of third term 2007 in the department of mathematics.

Environment

The study was conducted in Lelwak secondary school in South Nandi district, Kenya. Lelwak secondary school was selected due to its convenience to the researcher who is a teacher who is a teacher in the school; hence access to the school results was easy.

Respondents:

The study involved form two, form three and form four of 2008 and all the mathematics teachers. The collection of the data was done in term one of 2008 when form one had not settled in school. Therefore, they were excluded. The school is a double stream. The total population of form two, three and four was 240. One of the selections techniques employed was stratified random sampling. Stratification was done according to the performance of students in mathematics. These techniques ensured that the three categories of performance (above average, average and between average) were represented in the sample. Purposive sampling was then used to select students according to how they have been performing in mathematics.

This was done using previous mathematics examinations results with the help of the head of mathematics department in the school under study. In every class, the first 8 above average, 8 average and 8 below average students were selected. A total of 24 students out of 80 per class were selected. The total sample was 72 out of 240, representing 30%. The sample was reliable because it represented weak, average and above average students.

3.1 Instrumentation (data collection tools)

The data was collected through research designed questionnaires. The questionnaires were developed after critically studying those designed by Induli (2003) and Owite (2001). The secondary data was collected in the department of Mathematics. There was one questionnaire for teachers and one for students and one interview for mathematics teachers only.

Student's Questionnaire

The secondary students mathematics questionnaires (SSMQ) was measuring students' feeling towards mathematics and Liker Type scale was used due to its high reliability.

Teacher's questionnaire

The secondary teachers' mathematics questionnaire (STMQ) was to collect information regarding teacher's perception of the students. With respect to the learning of mathematics, there were also interview schedules for the teachers.

3.2 Data collection procedures

Formal permission was sought from the principal through the institute of continuing and distance studies, Kampala International University. Notification to do the study in the selected school was availed in advance to the principal. The researcher

encouraged the respondents to answer the questionnaires freely. The researcher administered the questionnaires to each individual respondent. The respondent was to answer within two weeks.

3.3 Data analysis

The following tables were used to analyze the data.

Descriptive statistics such as table frequencies and percentages

Table 1 was used to give information profile of respondents and table 2, their academic levels. Table 3 gave information on level of academic performance and table 4 gave information on attitudes scores for student towards mathematics.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 INTRODUCTION

This chapter presented the data analysis and interpretation of the findings. The data presented in form of tables showing frequencies and percentage.

Presentation of data was divided into section, namely:

- a) Analysis of the data pertaining profile of the respondents.
- b) Academic level of the respondents
- c) Level of academic performance of the students.
- d) Attitude scores for students.
- e) Interview schedule for teaches.

4.1 ANALYSIS OF THE DATA PERTAINING PROFILE OF THE RESPONDENTS

The table presented the frequency and percentage of respondents grouped by age and gender. Out of 78 respondents 6 were mathematics teachers and 72 were students. It was analyzed as follows:

Category age	Frequency	Percentage
Early adolescent (9-12)	0	0
Middle adolescent (13-16)	45	58.7
Late adolescent (17-23)	27	34.6
Adults (above 25 years)	6	7.7
Gender	75%	96.2%
Male	3	3.8
Female	2	3.4
TOTAL	78	100

Source: Primary data

From the table above early adolescents were not yet in secondary school. Middle adolescent were 58.7%. some are in form two and others are in form three. Late adolescent were 3.4%. to these were some form three and four. 7.7% were mathematics teachers in the selected school. Majority 96% were male, 3.4% were female teachers in the school.

4.2 ACADEMIC LEVEL OF THE RESPONDENTS

Table 2: Analysis of academic level of the respondents

Academic level	Frequency	Percentage
F2	24	30.8
F3	24	30.8
F4	24	30.8
KCSE	1	1.28
Diploma	2	2.56
Degree	3	3.85
TOTAL	78	100

Source: Primary Data

From the table above, 92.4% were students who responded. 1.28% were untrained teacher. 2.56% were diploma teachers and bachelor in education were 3.85% respectively. It revealed that majority of the mathematics teachers were trained.

4.3 LEVEL OF ACADEMIC PERFORMANCE

Table 3

Category	Frequency	Percentage
Above average	24	33
Average	24	33
Below average	24	33
Total	72	100

Source: Primary data

The table 3 above was a result of stratified random sampling. Stratification was done according to the performance of students in mathematics. Purposive sampling was used to select 8 students in each category in every class from four two, three and four.

Table 4: Attitudes score for the students

Category	attitude			
	Positive	Neutral	Negative	Total
A	17(23.61)	3(4.17)	4(5.56)	24
B	4(5.56)	11(15.28)	9(12.5)	24
C	1(1.39)	2(2.78)	21(32.94)	24
Total	14	18	31	72

Source: Primary data

Category C (below average) is 1.39, 2.78 and 32.94% were positive, neutral and negative respectively.

From the above analysis it was found out that attitude towards mathematics was directly proportional to performance in mathematics and negative attitude towards mathematics directly led to poor results.

d) Secondary teacher questionnaire from closed ended questionnaire, the teacher who responded said that generally the students need to work extra hard to do well in mathematics.

~~4.4~~ The response concept

The attitude of majority of students towards mathematics was negative except isolated cases like good provincial and national schools.

It was evidenced by verbal and action expressions associated with attitude. For instance students expressing his/her opinion, as "I hate mathematics" 'Mathematics is difficult' and action like coming to class late, sleeping during lesson, not feeling bothered by low scores and not revising Mathematics tests. They concluded that when the above habits are portrayed by the students' attitude towards Mathematics is negative.

The following ways were evidenced as support ways of enhancing the mathematical skills and other related concepts.

a) Through proper teaching. Proper teaching involved organization of learning.

The teacher organized himself and the students on how the activities would be carried out in regard to allocation of time and resources, students' assignments and seating arrangements in class.

- b) Use of visual aids. Use of visual aids led to effective communication of mathematical ideas hence enhancing positive attitude towards mathematics.
- c) Giving information concerning the purpose for leaning mathematics; for instance to prepare the learner for professional jobs like businessman, an engineer, farmer and so on.
- d) Introducing a topic by first explaining its rationale.

Another side method of enhancing performance was to ensure early completion of the syllabus in time to allow time for revision and development of other additional skills through several interactive processes.

The mean grade of mathematics in the district was very low (at most D) especially those in the category of the school under study that is district school. The teacher from other schools shared the same sediments on attitude.

From the interview schedule for teacher the following finding were identified

1. That to make mathematics enjoyable and easy to understand in our schools the teacher should show enthusiasm, make learning child centred ,motivate the learners through making of exercise books and giving positive reinforcement to learners.
2. The teacher should ensure that learners develop a willingness to work collaboratively by encouraging students to respect and appreciate each others views.
3. Mathematics teachers should ensure that learners communicate mathematical ideas by involving the learners in verbal communication

And by condensing information using symbols, equations and graphs.

The teacher should ensure maximum teaching/learning in a classroom situation by preparing in small steps so that students follow logical flow of the lesson by themselves.

- 4 The teacher should create students -friendly atmosphere students understanding of concepts and make a clear learning point as Each step so that students will be able to focus on it
- 5 further, teachers suggested that continuous assessment improves the performance in that at class level the teacher is continually assessing the learners in the questions asked .In that the teacher is able to correct misconceptions .Supervised practice in class, where learners work individually and the teacher marks the books ,enables the teacher to analyze the errors made by the students. Assessment in form of take away assignment encourages the learners when they get the feedback. Other suggested assessments are end term, end year and mock exams. The teachers also stressed that for any exams to improve the performance, the concepts which are not answered accurately should be identified and re-teach.

CHAPTER FIVE

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

The major purpose of this study was to investigate relationship between students' attitude towards mathematics and their performance among selected form two, three and four students of lelwak secondary school in Nandi south. The need to investigate attitude towards mathematics arose from the concern over research findings that mathematics is poorly performed subject. The study was designed in form of a case study of Lelwak secondary school. The respondents were purposely selected according to their performance in mathematics. Using questionnaires and interview schedules, the researcher collected data from students and teachers. The data was then analyzed manually using a scientific calculator. Frequencies and percentages were computed and assessed to highlight important aspects of the trends of data observed.

5.1 DISCUSSION

The discussion in this chapter follows the order of the research questions. The first question examined was:

1. What was the level of achievements for the respondents?

The level of achievement of the respondents were categorized into three, category A, are above average (Scoring above 50%). Category B Scoring between 40 and 50% and category C are below 40%.

2. How do positive or negative attitude impact on the performance of mathematics in the same school?

Attitude had impact on the performance as revealed in table 4 where 31.95 % were positive and they were in category of above average. While those who were negative (50%) and neutral 18.05%. this could be concluded that positive attitude of students towards mathematics result is good results and vice versa. This idea was supported by Bandura (1963) as stated in theoretical framework that: Attitude of the students was influenced by what they watched. Displayed poor results of the previous years demoralized the students. Students considered it or waste of time to concentrate on subject they would not pass in. They developed negative attitude. This is also supported by studies done by two psychologists Birch and Veroff.

“Anticipation or positive outcome enhanced the tendency to action while anticipation of negative outcome blocked the action.

There was a significant relationship between students' attitude towards mathematics and their performance. It is evidenced from table 4 and from observational point of view of the teachers interviewed. That the students with attitude towards mathematics participated actively in class discussion, do assignment in time, revise for exam, come to class in time and always got good grade in the subject, while the student with negative attitude was the opposite of the above. This idea is supported by (Ogoma 1987) and Neal (1969) they suggested that, attitude affected achievement and achievement affected attitude, refer to this relationship to as dynamic interaction between feeling and behavior as observed in the performance.

3.2 Conclusions

The following conclusions were made on the basis of the research findings.

1. When the student has positive attitudes towards mathematics, finds mathematics to be interesting, enjoys mathematics lesson.
2. When student has negative attitude towards mathematics finds mathematics lesson boring, sleeping during the lesson, not feel bothered by low scores.
3. Positive attitude towards mathematics has significant relationship to low performance.

Recommendation

On the basis of its findings this study concludes that there is relationship between attitude towards mathematics and its performance based on the conclusion, the following recommendation are made:

1. Poor attitude towards mathematics, students who do well in should be motivated by giving the rewards.
2. Below average students should be identified and given extra coaching.
3. Teachers to market the subject and encourage students to do them.
4. Mathematics teachers should include rationale in every topic introduce in class; for the students to see the usefulness of the concepts.
5. Teaching methodology should be student centered.
6. Teachers to ensure that basic concepts are mastered earlier.
7. Teacher to create friendly atmosphere, which dispels anxiety and fear in class.
8. The teacher should not be harsh, but encouraging particularly slow learners, should be showing willingness to help and also not being too fast to disillusion slow learners.
9. The schools' guidance and counseling departments should provide enough information on the relevance of mathematics i.e. make them aware that mathematics influence college admission, career and employment.
10. The government through the ministry of education should organize in-service course, seminars, workshops where mathematics education experts can be invited to furnish teachers with research findings on attitude.

Suggestion for further research

To bring more light into the issues investigated in this study, it is suggested that the following studies be conducted.

1. A similarly designed study covering a wider area.

APPENDICES

APPENDIX A

SECONDARY TEACHERS MATHEMATICS QUESTIONNAIRE (SSMQ)

SECTION A

The following are statements about mathematics and the student of mathematics. There are five options namely: Strongly agree (SA), Agree (A), Undecided (U), Disagree (D) and strongly disagree (SD). Please indicate against each statement the option that best describes your option by putting a tick.

STATEMENT	OPTION				
	SA	A	U	D	SD
1. Students need to work extra hard To do well in mathematics	☐	☐	☐	☐	☐
2. Only gifted students can pass Mathematics	☐	☐	☐	☐	☐
3. Mathematics is easy for boys	☐	☐	☐	☐	☐
4. Mathematics is useful for all Students.	☐	☐	☐	☐	☐
5. Passing Mathematics for boys mean Being masculine.	☐	☐	☐	☐	☐
6. Mathematics is a man's subject.	☐	☐	☐	☐	☐
7. Boys are faster learners in mathematics than girls.	☐	☐	☐	☐	☐

SECONDARY STUDENT MATHEMATICS QUESTIONNAIRE

SECTION B

This is not a test. It is only a questionnaire on what you think about mathematics.

There are no right or wrong answers but please respond honestly to all questions.

You are assured that your responses will be treated in strict confidence.

SECTION (1)

1. Indicate the form you are in by ticking. F2 ☐ F4 ☐

2. Indicate your age bracket by ticking

14 -15 ☐ 15 - 16 ☐ 16- 17 ☐

3. What was your performance in mathematics for KCPE

A ☐ A- ☐ B+ ☐ B ☐ B- ☐ C+ ☐ C ☐

C- ☐ D+ ☐ D ☐

4. Indicate your performance in mathematics for the end of year 2007 exam by ticking. The figures are in percentage.

10 - 20 ☐ 20- 30 ☐ 30 - 40 ☐ 40 - 50 ☐ 50 and above ☐

5. The issue of attitude contributed to the large extent to my performance above. Please tick the appropriate for your feelings.

Yes ☐ No. ☐

SECTION II

Here are sentences about how people feel about mathematics. Read each sentence carefully making sure you understand it, then tick the one nearest to your feelings.

They are:

Strongly agreed SA ☐

Agreed ☐

Undecided U ☐

Disagreed D ☐

Strongly disagree. SD ☐

If you think the statement is very near how you think, then tick "strongly agree (SA)" If the statement is near to what you think is then tick 'Agreed (A)'. However if you don't agree with the statement, tick "Disagree (D)" and if it is opposite to what you think, tick "strongly disagree (SD)"

STATEMENT

OPTIONS.

	SA	A	U	D	SD
1. Mathematics is interesting	☐	☐	☐	☐	☐
2. I'm not good in mathematics.	☐	☐	☐	☐	☐
3. I like story books more than Mathematics.	☐	☐	☐	☐	☐
4. Mathematics won't be very Important to me when I leave School.	☐	☐	☐	☐	☐
5. The subject I hate most is Mathematics.	☐	☐	☐	☐	☐
6. Mathematics - is my best subject.	☐	☐	☐	☐	☐
7. Mathematics is boring	☐	☐	☐	☐	☐
8. Mathematics should be made an optional subject.	☐	☐	☐	☐	☐
9. Mathematics is useful in life.	☐	☐	☐	☐	☐
10. A lot of Mathematics I'm taught	☐	☐	☐	☐	☐

is a wastage of time.

11. I'm disappointed when I miss a
Mathematics lesson.

☐☐☐☐☐

12. Girls do not usually choose a job
which Need any mathematics.

☐☐☐☐☐

13. Students really enjoy
Mathematics lessons

☐☐☐☐☐

14. Learning Mathematics is
more important for Boys than for girls.

☐☐☐☐☐

15. Mathematics is a subject
Which is more difficult

☐☐☐☐☐

16. I would like to do mathematics
After form four

☐☐☐☐☐

17. The job which need mathematics
Are normally meant for boys

☐☐☐☐☐

18. I never expect that I will do well in
Mathematics

☐☐☐☐☐

19. Mathematics is easier for me other
Than other subject

☐☐☐☐☐

20. I can't understand how some students
Think mathematics is enjoyable

☐☐☐☐☐

21. I like doing mathematics more than

☐☐☐☐☐

Doing anything else

22. I panic in mathematics test

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23. Mathematics is useful to me in my
Future career

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DEFINITION OF THE KEY TERMS AND ABBREVIATIONS

Attitude – Moon elal, 1994 defined attitude as a disposition to think or act in a particular way in relation to oneself other individuals, objects or groups in society. In this study, attitude is used to mean students dispositions to act in a particular way in relation to mathematics

POSITIVE ATTITUDE- is used to referred to students' act of liking mathematics

NEGATIVE ATTITUDE –Is the act of disliking mathematics

PERFORMANCE – Is the achievement in grades by the students in mathematics exams

RELATIONSHIP – Refers to way in which two or more people or thinks are connected

SMASSSE – Strengthening mathematic and science in secondary education.

KNEC refers to the Kenya National Examination Council

TSC refers to Teachers' Service Commission

MOEST refers to ministry of education science and technology

H.O.D refers to the head of the department

QASO refers to the Quality Assurance and Standards Officer

KIE refers to Kenya institute of education.