FACTORS AFFECTING ACADEMIC PERFORMANCE OF STUDENTS IN BIOLOGY WITHIN SELECTED PUBLIC SCHOOLS OF LARI DIVISION, KIAMBU WEST DISTRICT KENYA

BY

GEORGE WAMBUGU NDERITU

BED/15757/71/DF

RESEARCH PROJECT SUBMITED TO THE INSTITUTE OF OPEN AND DISTANCE LEARNING IN PARTIAL FULFILLMENTOF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF EDUCATION (SCIENCES) OF KAMPALA INTERNATIONAL UNIVERSITY

APRIL, 2009

DECLARATION

I GEORGE WAMBUGU declare that this research project is my original work except where acknowledged and has never been submitted to any University for any award.

Signature.....

GEORGE WAMBUGU
BED/15757/71/DF

Date..24/04/2009...

APPROVAL

I certify that the work submitted by this candidate was under my supervision. His work is ready for submission, to be evaluated for the award of a Bachelor of Education (Science) of Kampala International University.

Supervisor.....

Mr. Mundu Mustafa..... Date 24th/04/09

DEDICATION

I dedicate this research project to my wife Easter for her love and moral support when I was writing the research and pursuing my degree.

ACKNOWLEDGEMENT

I would like to acknowledge my supervisor Mr. Mundu Mustafa who guided me through the research.

I would also like to acknowledge all the respondents who positively responded to my questions.

My principal, who gave me time and encouragement throughout this project.

My family who had faith in me and enabled me to pursue my degree.

My Son Collins without his perseverance I would not have been able to study far away from home.

To them all I say a big thank you.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The last decades of the twentieth century saw many concerted efforts in research into gender issues all over the world. In Africa, international bodies and educationalists began in the 1960s to look into the way students and women were faring in Education. Their findings were depressing. By 1970s pro-female initiatives by some African governments to encourage enrolment of students in schools were started. Consequently, low enrolment figures indicated in the earlier years (1960-70) were in the 1990s shown to have improved. In Malawi statistics indicated that students comprised 54% of the students enrolled in 1990, an increase from 44.8% in the previous years. While in Zambia, Kenya and Nigeria students constituted nearly *50%* of the students enrolled in grade one (FAWE 1996).

For over twenty years there has been concern about the lack of women in higher level of biology and in careers for which biology was a prerequisite. Fennema and Sherman (1977) claimed that a lack of biology ematical background knowledge prevented women from entering a variety of occupations. In Australia too, results are used as a critical filter for higher education and future careers (Willis. 1995) and sex differences in participation remain a concern (Cuttance. 1995; Barnes & Home, 1996). Over the last two decades in Australia there have been a number of government policy initiatives concerning the education of students (Australian Education Council, I 993'. There has also been renewed interest in the potential of single-sex environments to cater more effectively for the needs of students (Milligan & Thomson, 1992).

In Uganda the general public continues to decry the poor performance of students in the national biology examinations. In biology the secondary school cycle lasts six years for students aged about 13 to 19 years. Over the past decade several countries in Sub Saharan Africa including Uganda have embraced Universal Secondary Education (USE)

system of education that seeks to promote basic education for all school going-age students

The secondary school enrolment has risen to about seven million students (Ministry of Education and Sports, 2005) hence the overcrowding. Secondary students are taught by teachers who do not specialize in subjects during training that lasts two years after secondary education. In the schools, teachers take preference to teach subjects they feel they are strong in. The majority of teacher trainees at the Grade III level are admitted to Secondary Teachers Colleges (PTCs) either failed or performed poorly in biology at the Uganda Certificate of Education (UCE) examinations. This contrasts with the practice of selection of teachers in Canada who come from a strong pool of candidates (Wildeen & Holborn, 1990).

In Kenya about 10% of the students like and are willing to study biology. The rest have to be persuaded or forced to study biology because it is compulsory Republic of Kenya (1999). They have a completely negative attitude towards the subject (especially the female students). The main reason for these problems is that up to the late 1970s, nobody chose to go to the university to study education as a profession. The good biology students studied engineering, medicine, accounting, or any other course hut teaching. Many of those who failed to meet the minimum requirements for their preferred careers became teachers. Such biology teachers tended to scare the learners to cover up their lack of content knowledge and their inadequate preparation to teach the lessons. SahaL.J (1983).

Students who participate well in biology are discriminated and men fear to marry them thinking they are tough. Such attitudes have lead to poor performance of students in biology and therefore there's need for the study to clear up such attitudes.

1.2 Statement of the Problem

Although gender differences in biology achievement have been recognized for almost 50 years, in most cases no special efforts have been made to alleviate them until recently; for example, during the reform movements of the 1960's in which there were major attempts

to improve students' learning of biology by changing the curriculum, very little attention was given to increasing the achievement of females. Biology is very important for future careers and yet students miss out on this opportunity due to some factors and hence need for the study.

1.3 Objectives of the Study

1.3.1 General Objective

This study set to find out General objective: investigate the causes of poor performance in biology among students in the selected secondary schools of Lari Division, Kiambu district, Kenya.

1.3.2 Specific Objectives

This study sought to;

1. Investigate the relationship between students' attitude and performance in biology

2. Investigate the relationship between teachers' attitudes and students' performance in biology.

3. Determine the relationship between the curriculum and performance of students in biology.

1.4 Research Questions

1. What is the relationship between student's attitude and performance in biology?
2. What is the relationship between teachers attitudes and students performance in biology?
3. What is the relationship between the curriculum and performance of students in biology?

1.5 Scope of the Study

The focus of this study was limited to investigating the factors responsible for poor performance in biology among female students in the selected secondary schools of Lari Division, Kiambu district, Kenya. The investigations will be based on the specific objectives derived from the general objectives. Any other aspects of factors affecting students' education other than the ones mentioned in the objectives were not investigated. The study will be taken between December 2008 and April 2009. The researcher chose this time frame because schools are open for a new term and therefore will be able to get the respondents presumably the intellectual elite, should be more aware of gender issues and research, or at the very best, should be more confident of their own ability.

1.6 Significance of the Study

The study will benefit the following disciplines:

Provide information that can be used by the Ministry of Education Policy Makers to identify attitudes that can be associated more with high performance of students in biology among students.

Enable Policy Makers provision for improving teaches quality with increased knowledge on the relationship between attitudes and achievement in biology of students among students in KCSE.

Increase awareness of the Head teachers, Board of Governors and PTA and Teachers on attitudes associated with high performance in biology by students.

In brief the biology teacher performance was reviewed, priority areas for improvement were identified and improvement plan containing may be developed for each priority area.

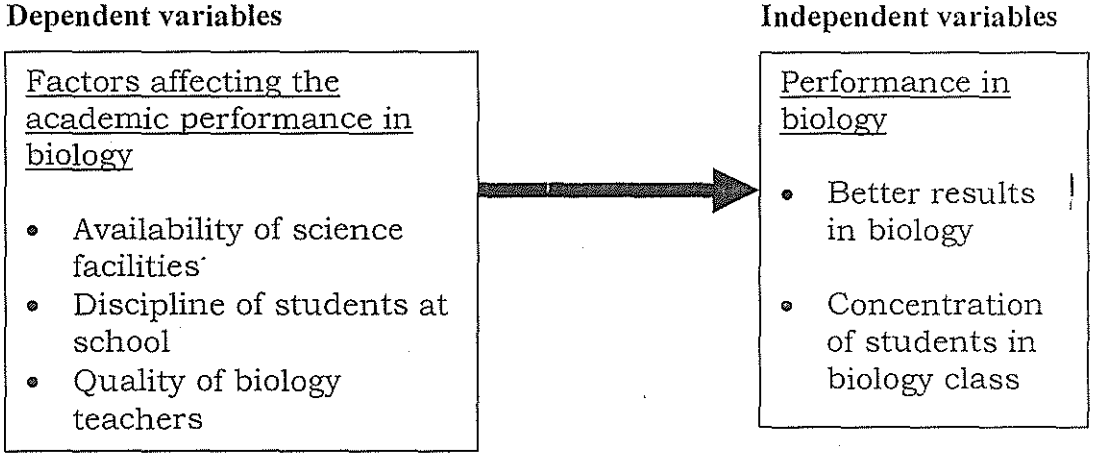
CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter reviews literature as an account of the knowledge and ideas that have been established by accredited scholars and experts in the field of study. It is guided by the objectives of the study outlined in chapter one

2.1 Conceptual Framework



2.2 Discipline of Students and Academic Performance in Biology

In recent years, policy makers, educators, parents and students increasingly have expressed concern about the incidence of school related criminal /behaviour. Although concern has grown, several researchers show that violent behaviour, smoking, theft have increased especially in secondary schools.

School discipline has a diversity of connotations, as many people perceive it to mean many different things. According to Kasozi (1997) discipline refers to a situation of remaining inside legal bounds of law as laid down by the school administration

Scheviakore (1955), Musaazi (1982) emphasize the need for orderlines in the school. They emphasize that students, teachers, school employers and administrators should all be orderly as school discipline and good academic performance is a collective responsibility and a prerequisite for school success.

The Education Policy Review Commission Report (EPRCR 1992) clearly spells out discipline as one of the aims and objectives of education at all levels of the education system.

According to Mafabi (1995) discipline is the underlying factor in all school activities; they cannot be pursued without it. In the absence of discipline, there is anarchy, a situation which makes it impossible for schools goals to be achieved. Most of these writers emphasize the need for discipline as a prerequisite for school success; however, they do not explicitly illustrate how discipline can be enforced in the school setting. School of authorities should not only stress the importance of discipline they also need to put mechanisms of enforcing it.

Okumbe (1998) describes discipline as the action by management to enforce organizational standards. He stresses that all members of educational organization are required to strictly adhere to the various behavioral patterns necessary for maximum performance. In support of this, Chaube (2000) contends that an opinion may be formed about the school by observing the discipline among students. It is necessary for every school to enforce certain rules of conduct to ensure discipline and discipline is essential if rules are to be implemented.

According to Musaazi (1982) student discipline means that students are provided with an opportunity to exercise self control to solve school problems, to learn and to promote the welfare of the school. Ssekamwa (2000) in agreement with Musaazi adds that discipline is the development of self worth, self control, respect for self and others and the adherence to the school routine set up in terms of schedules and school regulations.

It is very important for school authorities to give freedom to the students to develop the self esteem and exercise self control. There are many school authorities who use this approach to enforce discipline in schools. The researcher however feels that this method could be effective for post secondary school students and may not be appropriate for secondary Scholl students.

Docking (1980) considers discipline as an important element in the process of socialization formation of character, a system of controls, which enables teaching to take place on as conceptually related to the process of education.

According to Mafabi et al (1995) symptoms of indiscipline include; habitual absenteeism from class and from school as a whole, late coming, telling lies, rudeness, vandalism, aggression, smoking and drinking while at school, evading school activities, bullying of new students, indecent forms of dressing. These however do not explain how these behaviours affect academic performance because there are many students involved in these kinds of bahaviour but perform well.

McLeod (1992) identifies three types of component attitudes, emotions and beliefs relating to attitude to biology. Firstly, emotions are intense feelings, either positive or negative, which are evoked by a situation such as being confronted with a biology task. Secondly, are attitudes, which are predispositions to act in certain ways given certain concepts, ideas or situations? Attitudes can be held towards biology and include (according to Bell et all, 1983); Liking/disliking of biology, Confidence (or 4ck *of)* in own ability, anxiety towards biology and perceived utility of biology.
Thirdly, there are systems of ides or beliefs which reflect a person's values and outlook, including beliefs about gender roles and the appropriateness of biology for men and women.(APU 1988), Some content that the importance of attitude towards biology is its connection to achievement; for example, Bell et all (1983) and McLeod, (1992) found a low but significant correlation between these two factors — thus, more positive attitude may produce a higher level of achievement which is further compounded by gender. Research ambivalent, however, on the attitude — achievement link and there is much

stronger argument that links attitudes to biology with future participation. (Otieno, K 1997). I concur with the researchers that students negative attitudes towards biology affects their performance.

2.3. Teacher's Attitudes Towards Students' Performance in Biology.

The personality of the teachers teaching biology is worrying. The teachers have weak academic backgrounds on the biology content to deliver Barnes, M., & Home, M. (1996). Their own attitudes to biology may contribute to their inability to motivate the students to learn biology. The teaching methods that are used remain predominantly the traditional 'talk and chalk' mode of delivery. The teachers are under pressure to enable their students pass examinations and are therefore forced to water down the implemented curriculum. Anderson W.L (1991) Although teachers attempt to cover all the content of the syllabus, the frequent disruptions in the teaching time due to un gazetted holidays, late start of the term and so on do not allow the completion of the syllabus in most schools. The characteristics of the students retard the pace of coverage of the content. R ,Ndawula, R. & Bbosa, D. (2007). The fact that few students cannot effectively read and write by the time they are in — which is the top class in the secondary school level, spells out problems of the ability to comprehend what is taught.

Teachers sometimes contribute to students' poor self-concept in biology. They may imply, for example, that students do not need biology or they may react more negatively when students ask questions of clarification than when boys ask (Jackson & Leffingwell, 1999).Jones and Smart (1995) consider lack of confidence to be a major factor affecting students low participation in biology. This is true because most teachers show students that they are not capable of passing biology and this discourages them.

2.4 The Relationship between Curriculum and Performance

According to Carey et a! (1994) even the development of curriculum designed to serve all students has perpetuated inequalities. One reason for this is that the developers have not considered what is known about how students learn biology with understanding. In some instances there has been little communication between researchers in mainstream

biological education, who have not been directly concerned with equity issues and equity researchers, who have not been concerned with critical mainstream research.(Barnes, M. 1991), Before truly equitable classrooms can be developed, concerns about equity and knowledge about students 's learning must be integrated. Carey et all (1994) suggest a need for blending research on equity and students 's learning, stating the knowledge gained using a cognitive science research paradigm contributes to our understanding of learning in schools.

The nature of the curriculum and syllabus is one critical element for the opportunity-to learn, the curriculum is overcrowded thus affecting opportunity-to-learn. Since the curriculum is too heavy the most teachers are not able to cover it adequately thus reducing the chances of the students to learn. Otieno,K (1997). Although teachers attempt to cover all the content of the syllabus, the frequent disruptions in the teaching time due to un-gazetted holidays, late start of the term and so on do not allow the completion of the syllabus in most schools. This result indicates that the content of the syllabus may not all be relevant to the needs of the students either for their further education or use in real life. The content is then cosmetically covered on the surface to prepare students for examinations. The implication of this finding is that curriculum review that is focused on the needs of the society is necessary Barnes, M. (1991).This is true because in most cases the teachers do not manage to complete the syllabus.

In conclusion inadequate research has been conducted on students' performance in biological and therefore this study seeks to contribute to this area of study.

CHAPTER THREE

METHODOLOGY

3.0. Introduction

Chapter details the methods the researcher used to collect data.

3.1 Research Design

The research was presented in both qualitative and quantitative design. Qualitative design helped the researcher get a deeper meaning of the study while quantitative helped in analyzing the numbers that were involved in the study. A descriptive survey design was used and this helped the researcher get a sample of variables than the whole population.

3.2 Population of the Study

The study included the teachers and students both boys and girls. They were chosen to be part of the study due to the fact that the researcher is a teacher there and thus it was very easy to collect data from the respondents. It also saved valuable time and money that would have otherwise been used if he took the research from somewhere else.

3.3 Instruments of Data Collection

The instruments of the study included; interviews with the teachers and questionnaires of which the teachers helped the students in filling them.

3.4 Data Collection Procedures

A letter of introduction was picked from the University and this helped in a way that the interviewees were willing to give the researcher information. The letter was introduced to the headmaster before questionnaires were distributed to the students and interviews held with the teachers

3.5 Statistical Treatments of Data

The frequency and percentage was used to determine the number of sample respondents that participated in the study and the number that participated positively in the research.

Formula;

$$\text{Percentage } (\%) = \frac{F \times 100}{\text{Total number of respondents}}$$

Where F = number of respondents

Observed

Qualitative analysis; Data from semi-structural, observation, and in-depth interviews were standardized hence requiring categorization. Such data was presented in a descriptive form above and was used to discuss the results of quantitative data.

CHAPTER FOUR
PRESENTATION, INTERPRETATION AND ANALYSIS OF DATA

4.0 Introduction

In this chapter an attempt is made to interpret and explain the findings. Also key information enables to relate to the specific objectives and give a clear picture of the results.

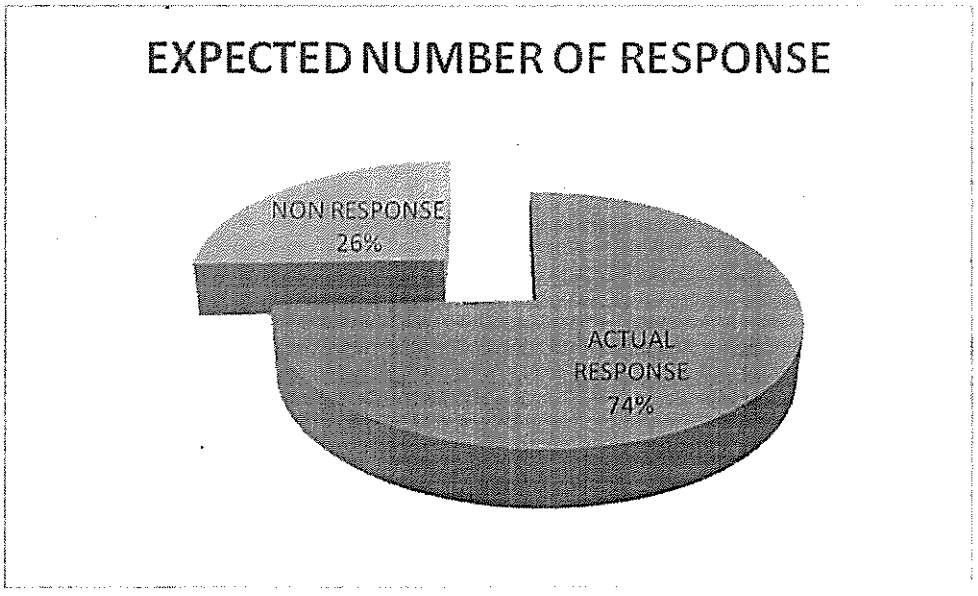
4.1.1 Data Analysis and Processing

4.1.2 The Expected Number of Respondents

Response Rate = $\frac{\text{Actual response} \times 100}{\text{Planned No of response}}$

58/ 78x 100 = 74 %

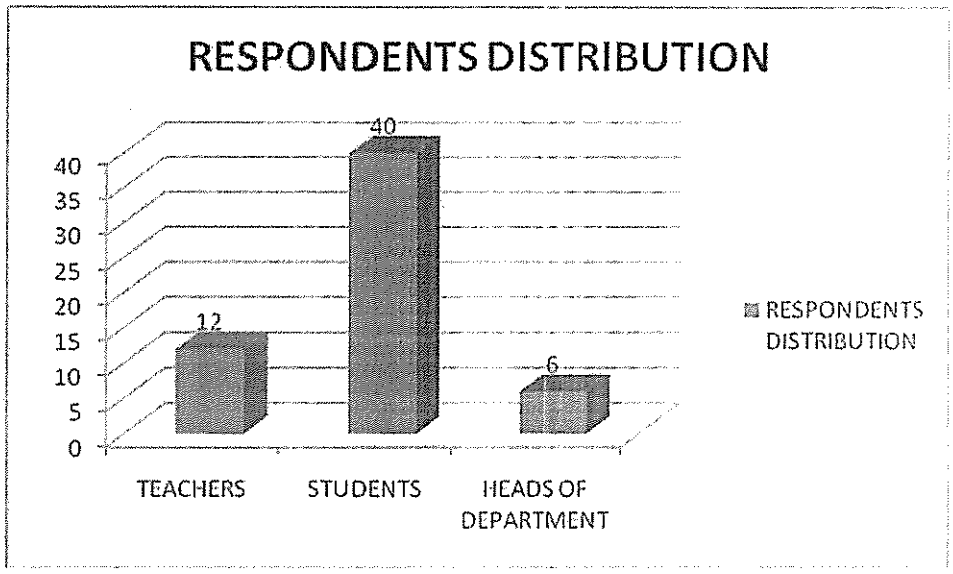
Chart 1Showing the Expected Response Rate of the Targeted Sample



Source: primary data (2009)

From the above graph the expected number of respondents was 78 from the school. However 58 respondents representing 74% responded this was considered an adequate size of the sample suffice and the researcher continued and carried out the research.

Bar Graph 1 Showing the Respondents' Distribution.



Source: primary data (2009)

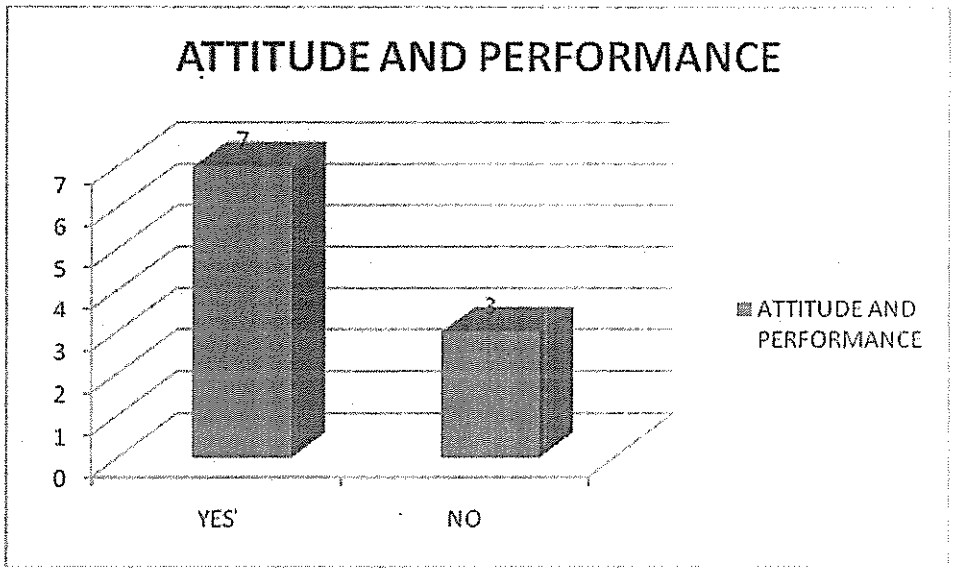
12 respondents representing 20.2% were teachers, 40 respondents representing 68% were students while 6 respondents representing 10% were heads of department biology in the selected schools.

RESPONDENTS ANALYSIS

4.2 Research Question 1, on what is the Impact of Students' Attitude on Performance in Biology.

4.2.1 Teachers Response

Bar Graph 2 Showing Teachers Response as to the Attitude and Performance

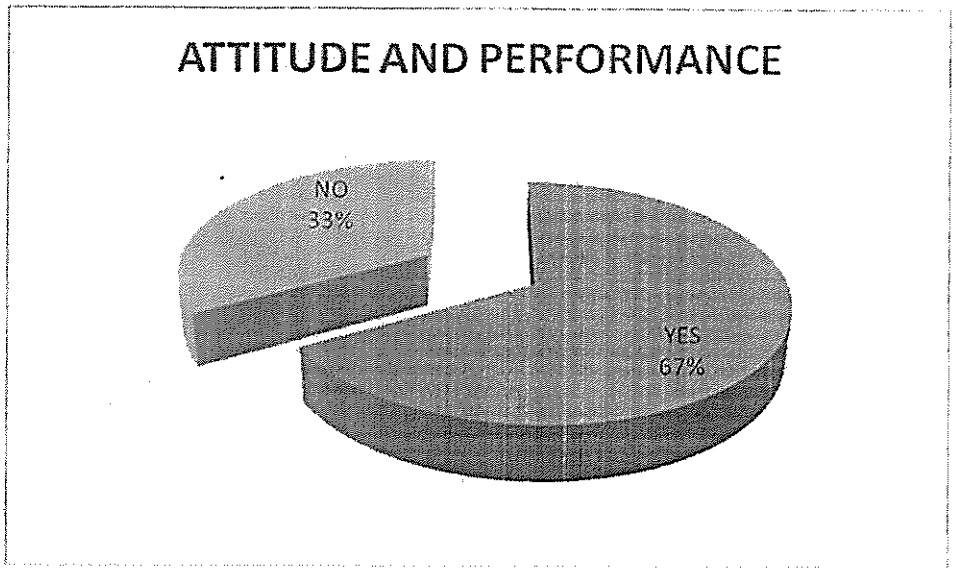


Source: primary data (2009)

Majority of the respondents said that students' attitude did impact on performance this was represented by 70% while 30% said that the students' attitude did not impact on their performance.

4.2.2 Heads of department response

Bar Graph 3 Showing Head of Department Response as to the Attitude and Performance

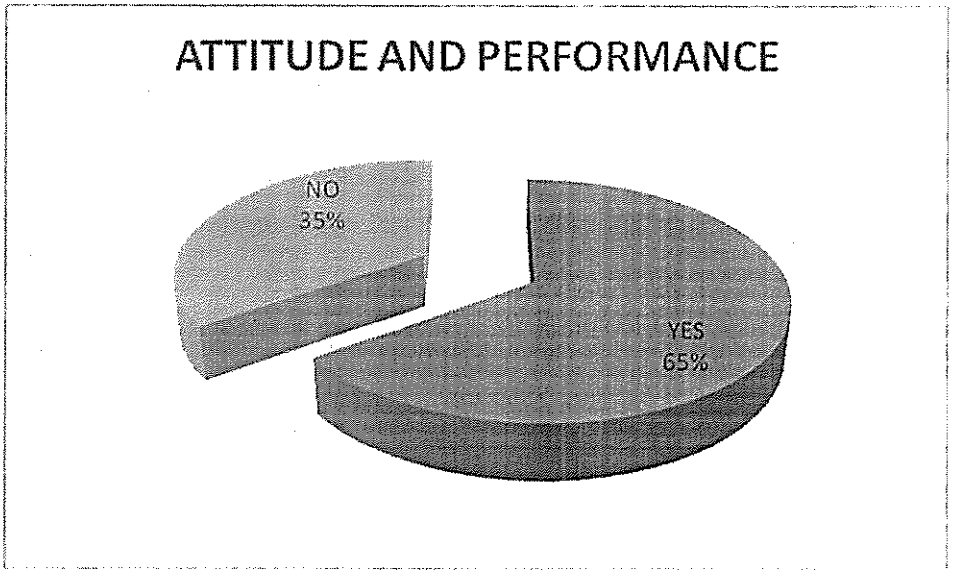


Source: primary data (2009)

Majority of the respondents 67% said that attitude of students affected their performance while 33% said that students attitude did not affect the students performance.

4.2.3 Response as to whether Students Attitude Impact on Performance

Bar Graph 4 Showing Students as the Attitude and Performance



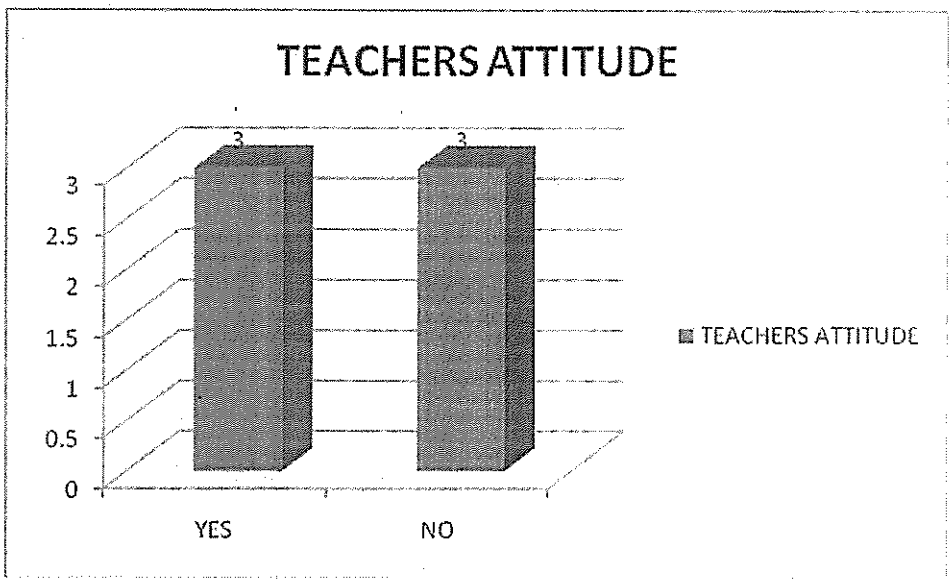
Source: primary data (2009)

65% of respondents said that students' attitude impact on their performance while 35% said attitude did not affect their performance.

4.3 The Impact of Teacher's Attitude Towards Students and Performance Biology

4.3 .1 Head of department response

Bar Graph 5. Showing Response on Impact of Teachers Attitude toward Biology and Performance.

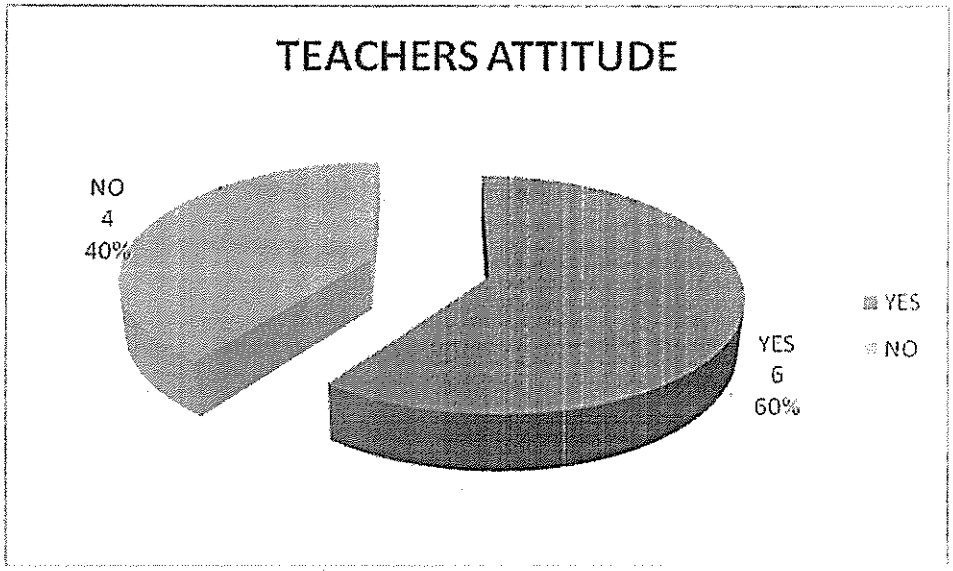


Source: primary data (2009)

50% of the respondents said teachers' attitude did impact on students' performance and 50% of the respondents said that teacher's attitude had no impact on students' performance.

4.3.2 Teachers' Response on Teachers' Attitude and Performance

Chart 2. Showing response on teachers attitude and performance

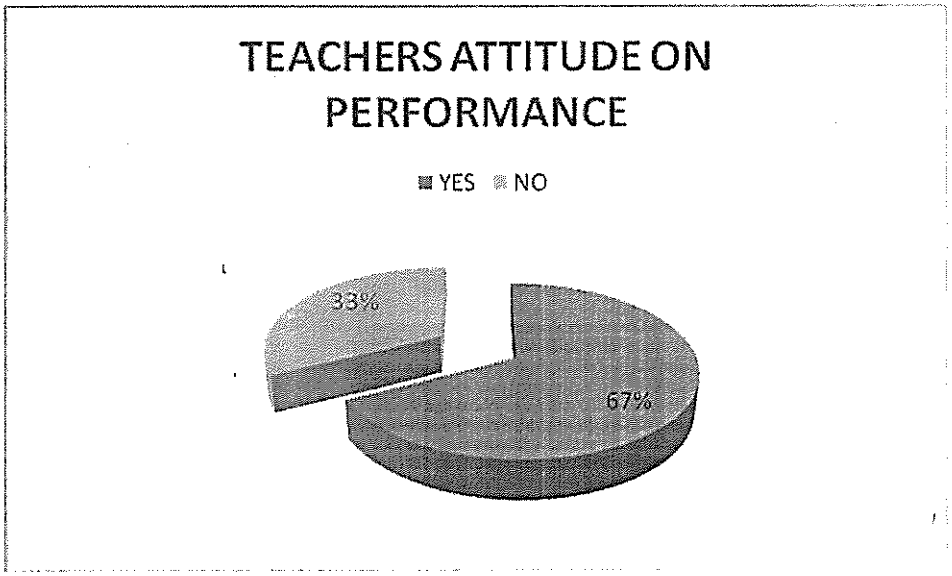


Source: primary data (2009):

The majority of respondents' 60% said that teacher's attitude impact on the performance of students while 40% said attitude did not affect the performance of the students.

4.3.3 Students' Response

Chart 3. Showing Response as to Teachers Attitude on Performance



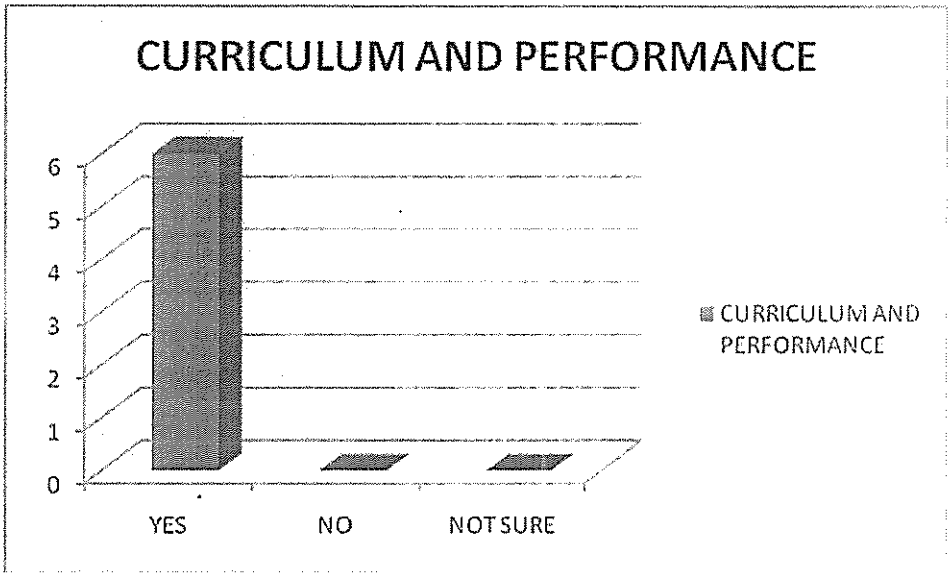
Source: primary data (2009)

67% of respondents said that their attitude impact on their performance while 33% said attitude did not affect their performance.

4.4 Response as to Curriculum and Performance

4.4.1 Head of teacher's response

Bar graph 6. Showing Response On Curriculum and performance

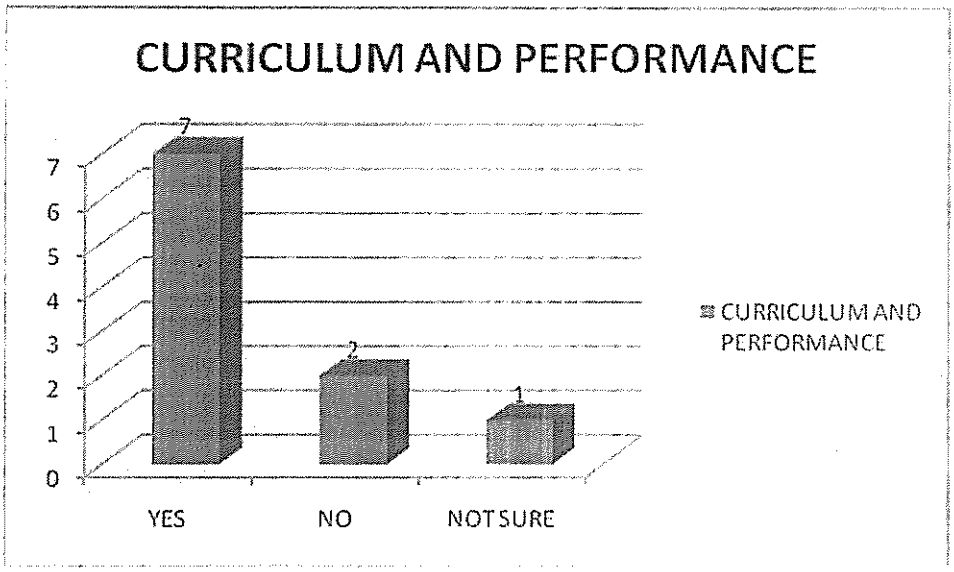


Source: primary data (2009)

All the respondents 100% that curriculum impact on performance.

4.4.2 Teachers' response as to curricula and performance

Bar Graph 7. Showing response on curriculum and performance

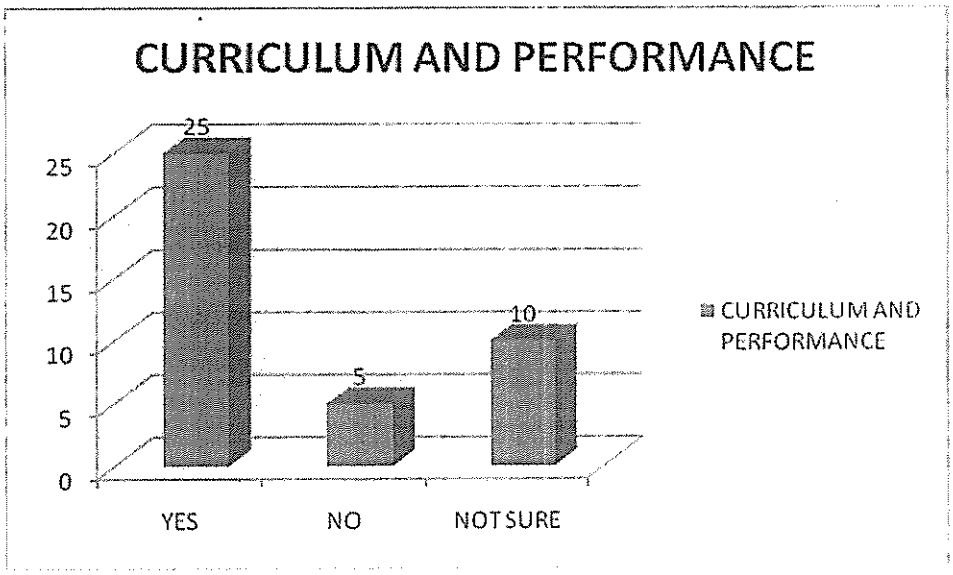


Source: primary data (2009)

70% of respondents said that curriculum impact on performance of students' while 20% said curriculum did not affect the performance of the students while 10% were not sure.

4.4.3 Students' response

Bar Graph 8 Showing Response On curriculum and performance



Source: primary data (2009)

62.5% of the respondent said that students' curriculum impact on the performance while 12.5% said curriculum did not affect the performance of the students, While 25% were not sure.

CHAPTER FIVE
DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

In this chapter an attempt is made to discuss the findings and come up with conclusions and the recommendations there to.

5.1 Discussion

One of the main outcomes of the study is the confirmation it has provided that students perform well in biology at the secondary level. The findings of boys perform well in biology at secondary level agree with those of Githua and Mwangi (2003) in Kenya, Afrassa (2002) in Ethiopia and other parts of Africa (Kogolla,Kisaka,& Waititu,2004) similar findings were also reported in other studies (Koller,Baumert,& Schnabel,2001).These findings, however, contradict those of Hanna(2003),Boaler (1997) and Vale,Forgasz,& Horne(2004).That students perception towards biology impacts negatively on their performance. The research finding found out that those students with negative perception towards biology performed poorly while those with a positive perception performed better.

This study also aimed to determine the factors that impact on the biology achievement of student's in biology.

One of the findings of the present study relates to the method of teaching normally employed in the biology classrooms at secondary level in Kenya. The method was teacher-centered, and student's were passive and on the receiving end. This phenomenon reflected the lessons described by nunes and Bryant (Nunes&Bryant,1997),and the descriptions of primary classes in Mauritius(Griffiths,1998,2000,2002).

It seems that insufficient opportunities are provided to be involved in their own learning, and empasises the procedures used for solving biology problems. It seems that the examination-driven curriculum in Kenya leads to a more teacher-centered curriculum.

Teachers were to be playing a fundamental role in influencing students learning of biology, as noted by Hanna&Nyhof-young (1995).They also helped student's to develop a positive attitude towards sciences and motivate them towards the subject. The respect student's have for their teachers could be noted during the classroom observations and interviews. This supports the finding of Aldridge, Fraser and huang (Aldridge, Fraser, &Huang, 1999) concerning the respect student's had for their teacher in Taiwan.

It was also found that teachers were seen to be strict, and that student's appreciated the strictness, claiming that this helped them to have a displined class in which to learn biology. Evidence of this can be found in the transcripts of student's interviews.

Peers were found to be influential in a child's learning of sciences and, in some cases, in decisions to proceed further with other courses and the learning of sciences in general. This agrees to the findings of Opdenakker&Van Damme (2001), Sam&Ernest (1999) and Hoxby (2002).

Peer influence is not restricted to the classroom only or to school mates, but from a much larger group through private tuition. The practice of private tuition allows student's of different regions, colleges, cultures and social classes to be together and consequently to form a larger peer group. This study was restricted to the peer influence within the classroom towards the teaching and learning of biology.

A correlation coefficient of 0.336 between attitude towards mathematics and performance in the science test was noted in this study. However no gender difference in attitude

towards biology was observed. A positive attitude towards sciences and interest in the subject tends to motivate students into putting more effort into the subject, and consequently enhanced their biology.

Achievements, concerning success or failure in science, it was found that students attributed success primarily to efforts-evidence coming from the transcripts of students interviews as discussed. These findings agreed with the findings of Mooney and Thornton (1999) but no apparent gender differences were noted – contracting the outcomes reports by Ernest (1994) and leder, forgasz and swolar (1996).It can be deduced that Kenya girls are different to Australian and English girls in this respect.

5.1 Conclusion

In conclusion the study objectives of establishing the factors that affect the performance of students in biology were investigated. The objectives of the study were therefore fulfilled as the researcher was able to establish the objectives of the study which were: the relationship between student's attitude and performance, the teacher's attitude toward biology students was also explored and lastly the relationship between curriculum and performance of biology students.

It was established that the student's attitude impacts on their performance. Thus students who had a positive attitude toward biology were seen to perform better while those with negative attitude performed poorly.

Teacher's attitude also impacts on student's performance. Teachers who had a positive attitude tended to teach better and the students were able to understand biological concepts better therefore ensuring that they performed better.

Curriculum does impact on student's performance as the kind of syllabus the students use determines that they pass or fail. Therefore simpler biological concepts are better taught in early secondary years giving students time to advance gradually. Therefore being better placed to understand harder biological concepts as they advance. This ensures that the students have a good background to biology therefore performing better.

5.4 Recommendations

The most direct impact of this study will hopefully be in the classroom and will help teachers to use the findings, in particular;

- Using student-centered teaching approaches
- Using meaningful activities in their classrooms
- Promoting conceptual understanding in biology.
- Emphasizing process rather than product during problem-solving sessions
- Promoting collaborative learning in biology classes.
- Helping students to develop a positive attitude towards biology.
- Motivating students in their learning of biology.
- Enhancing the science achievement of all students.
- Promoting equity in education.

Teachers will have evidence on how different strategies can be incorporated with success into their regular classroom transactions and within their schedule of work. One teacher, who was a respondent of the study, stated that using cooperative learning and pupil-centered methods would be very time consuming and that teachers would face difficulties in completing syllabus.

As argued in the previous chapters, one of the main worries of teachers and parents is that syllabus should be thoughly completed. All that is required is readjustment.

5.5 Suggestions for Further Research

Due to funding and logistic limitations, this project was conducted as a pilot study that utilized a small sample size, relatively short time duration, and a convenience sampling technique. It is suggested that a follow-up study should be carried out over a longer time span (about 15 weeks of instruction), and that the study should use a much larger sample size, and if possible, adopt randomization procedures in sample composition. A sufficiently large sample would make it possible to include a sizeable number of male and female participants in the study such that more hypotheses could be built into the research design. For example, it would be interesting to investigate both the possible effect of gender on biology performance, and a possible interaction effect between treatment (curriculum type) and gender.

Further studies on gender and biology at secondary level should be conducted in relation to single sex and co-educational schools. An investigation of the attitudes towards sciences and the performance of boys and girls in single sex schools, as compared to those in co-education schools, could prove to be important.

This study has just touched upon relationship between culture and performance in biology. Kenya is a multicultural country with a blend of different cultures and an in-depth study wherein the issue of gender and science in relation to ethnicity would be valued.

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APPENDIX I

QUESTIONNAIRE

My name is George Wambugu Ndiritu, a student from Kampala international university (K.I.U.), Faculty of Education.

I am collecting data in relation to factors affecting poor performance in biology in Lari division, Kiambu west district Kenya, I request for your cooperation and I promise not to take much of your time.

Please note that we do not mention people's names to ensure privacy and confidentiality.

TICK WHERE APPROPRIATE

i) Do you like biology?

☐ Yes ☐ No

ii) Do you pass the subject?

☐ Yes No ☐

iii) Which science subject is your first choice?

Biology ☐

Chemistry ☐

Physics ☐

iv) Is biology teaching interesting at your school?

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v) Do you believe student's perception affects the performance of biology subject in your school?

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vi) Does positive perception towards biology enhance better performance of students?

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vii) Do all topics in biology attract the same kind of perception towards biology?

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viii) Is there a relationship between teachers and negative perception towards biology?

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