

**STUDENTS INTEREST AND ACADEMIC PERFORMANCE IN
PHYSICS IN MILANI HIGH SCHOOL, WEBUYE DIVISION
BUNGOMA KENYA.**

A research report submitted to the Institute of Continuing and
Distance Studies

In partial fulfillment of the requirements for the award of Bachelors
Degree of Education of Kampala International University.

By
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AUGUST, 2007

DECLARATION

I, the undersigned do declare to the best of my knowledge that this graduation project is my original work and that it has never been submitted to any university or any other institution.

Signed: 

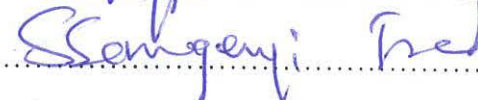
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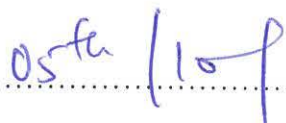
Approval

This research proposal has been done under the tutorogy of Mr. Ssemugenyi Fred.

Signed.....

Name.....

Supervisor

Date:.........., 2007

DEDICATION

I would like to dedicate this project to my dear fiancée Mary as promised, my dad and mum for the joy they have brought in my life and financial support they gave to me.

ACKNOWLEDGMENT

In this research I received help from many talented individuals during the study process. Their assistance was greatly appreciated. At Milani secondary school. Mr. Siingia Wanyama the school principal students, and teachers of Milani high school.

Dr. Luzano from Philipin one of my physics lecturer, Mr. Ssemugenyi Fred my supervisor during this study and prof: E.D Fagbamiye.

Not forgetting the entire Kampala International community for the good library facilities and books I used while researching.

Last, but certainly not least, I wish to thank my elder brother Amos Wanjala of Bokoli high school for his support financially and encouragements during my studies from primary to this university level, may God bless them all.

ABSTRACT

The purpose of this study to identify specific factors which either generate or perpetuate preconceived notions about physics. Through the use of 165, students identified their intrinsic response to physics and the factors which influenced their respective responses.

The students who took part in the survey cited many different reasons for their interest in physics or their dislike of physics. The largest factor to encourage interest in physics was due to influence of teachers. However, the largest cause of an irrational dislike or fear of physics was induced by fellow classmates who would discuss the high level of difficulty involved with the subject matter.

By possibly addressing these negative influences, more students could be given the chance to develop a genuine interest in physics.

ABBREVIATIONS

K.C.S.E – Kenya Certificate of secondary education

Lab – Laboratory room

T.S.C – Teacher, service commission

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CHAPTER ONE

INTRODUCTION

1.1 GENERAL INTRODUCTION

Releasing the K.C.S.E results for the year 2005, the Minister for Education Dr. Noah Wekesa said “But the worry continued in regard to gender and regional performance”.

From the Ministers statements there is a long tradition in the examination of gender differences. When looking at students interests and attitudes towards science, their study behaviour and achievements.

According to modern psychological theories (e.g Krapp, 2002:Hoff Mann, 2002) interest in physics can be seen as a psychological construct that emerges from a student's interaction with (physical) objects and phenomena.

Physics as a school subject, interest can be seen as a medium supporting learning processes and the quantity of learning.

Thus with interest, there is learning and without interest there is no learning. Therefore the level of interest affects the academic performance of the learner!

In this study, we are to find out the finer relationship between the level of interest and performance. Since we live in a world that is increasingly dependent on physics and fuelled by break throughs in physics research, technology continually advances we are beginning to answer questions about the beginning and the end of the universe and we are discovering amazing things about the interaction of sub atomic particles.

Unfortunately, less and less students are studying physics which is causing the general public to mitigate their understanding about scientific concepts.

1.2 PROBLEM STATEMENT

In Milani High School; last year only one girl chose physics and sat the K.C.S.E physics exam. This is out of the class total population of 41 students. Out of the same class population; only 10 boys chose physics making a total of 11 students seating the physics exam last year.

This suggested that only 29% of the class population showed interest in physics but the rest 71% had very little or no interest in physics.

This presents a question to me and the whole world; what will happen tomorrow if this trend continues. If very few or non- is willing to study physics?

This problem merits investigation especially in view of the fact that we need engineers, pilots, and mechanics in order to be industrialized by the year 2020.

If we want a world with more advances in physics, we are going to need more physists to advance it.

If we going to encourage more students to study physics, we need to identify influential factor which cause students to be either interested or disinterested in this discipline.

According to a 1992 study, students form opinions about physics in the early years of secondary school, and those beliefs become less favourable as student get older.

Another study from 2000 suggest that part of the problem lies with the nature of physics.

Finally, many students do not take physics because they are admittedly worried about struggling with the class or even failing the exam because of the extreme level of difficulty that they associate with physics.

1.3 RATIONAL OF THE STUDY

Performance of physics as one of the science subjects, generally, the performance and scores in physics has been very low to the level that we are left wondering how in the future we will build taller buildings now that the worlds population is growing everyday and the demand for modern structures is increasing.

Internationally, the demand and migration from rural to urban centers is on the rise yet very few learners are able to pursue physics based courses like engineering.

Africa as a continent has been importing engineers from Japan, China, America and European countries to construct roads, houses, bridges and other technical structures. This contradicts the idea that; we live in a world that is increasingly dependant on constructions to be able to attain industrialization in the near future.

Locally in Kenya, releasing the Kenya Certificate of Secondary Exam (K.C.S.E) results for the year 2005, the Minister for Education Dr. Noah Wekesa said, “But the worry continued in regard to gender and regional performance other than economics, woodwork, Art and Design, the girls did better than boys only in subjects that are traditionally their domain – English, Kiswahili, History, Religious Education, Home Science and Music.

From the ministers statement, there is a long tradition in the examination of gender differences when looking at students interests and attitudes towards science, their study behaviour and achievements.

This results and the ministers statements when releasing the results made me as a teacher develop interest and concern on what are the major or minor causes of this parities.

This justifies this study to look into the areas that can bring recovery to the situation.

1.4 THEORY

According to modern psychological theories; Knapp, 2002; Hoffmann, 2002. Interest in physics can be seen as a psychological construct that emerges from students interst with (physical) objects and phenomena.

With physics as a school subject, interest can be seen as a medium support learning process and the quality of learning.

Osborne's (2003) comprehensive literature survey shows that one of the motivations for gender related research in science education is the fact that there are few girls in technical and science related occupation, but more qualified personnel are needed. In addition, the number of pupils in general who choose science courses in school appears to be decreasing. To solve these problem, different kinds of intervention objects, have been launched to increase the number of girls who select science subjects, especially physics.

Hoffman, 2002. Increasingly the number of girls in science (and Technology) has been seen as a solution to ensure productivity and the economic future of nations. This has been considered an international problem, at least in western countries. Equal opportunity legislation has provided an additional reason to increase female participation.

Thus, increasing the number of people in non-traditional occupations e.g (girls in technology and boys in nurturing jobs such as nursing has been seen as a way to develop a more equal society. Osborne 2003).

Over the past two decades high school students' vocational preferences have remained strongly gender-stereo-type, girls have expressly increasing interests in occupation traditionally held by men (Sandberg et al, 1991). Nevertheless, the women's progress in entering and excelling at male dominated professions has been slow. Women remained heavily concentrated in the less well paid , traditionally feminine and professions of literature , social work, education and nursing(US bureau of the census,1992)

CHAPTER TWO

Review of related literature

2.1 AGE IN RELATION TO INTEREST

Some of the sources of the literature include; factors which determine interest or fear in physics by John Laurence Malory May 2004 (from internet), a new instrument for measuring students beliefs about physics and learning by W. H. Adams, H.H. Perhios and his colleagues.

2.2 GENDER AND INTEREST IN PHYSICS

Gender issues boys' and girls' interest in physics in different context by Halle Jnuti, Jari Lavonel, Anna Uitto, Reijo Byman and Veijo Meisaloamong others. Over the last decade, researchers in science education have identified a variety of student attitudes and beliefs that shape and are shaped by student classroom experience.

There are many useful ways of analyze and use of class data one can look at the pre-results and their correlation with student learning, course selection, retention, gender, age, major, etc.

2.3 ACADEMIC LEVEL AND INTEREST IN PHYSICS

The "overall" and personal interest pre-results vary for four courses covering a range of introductory physics. We see that student's incoming score increase with level of physics. Thus students who make larger commitments to studying physics tend to be those who identify physics as being more relevant to their own lives. Also women have lower personal interest scores than men for all courses related to physics.

These various results are obviously relevant to the question of how to increase the number and diversity of students going into stem (Science, Technology, Engineering and Physics) discipline.

In a companion study that is to be carried out, we will examine many of these issues in more detail and also examine correlations between students beliefs and their learning gains.

The objectives of this study being to determine the profile of the respondents in age, gender and academic level. It is also in line with determining the level of students interest in physics as to:- teaching methods, motivation, testing and assessment methods and finally to determine if there is any significant relation and level of academic performance.

2.3 MOTIVATION AND STUDENT INTEREST IN PHYSICS

Students interest is largely contributed by the influence of physics teacher or professor or family members the work of famous physicists and peers too can make learners motivated to study physics

2.4 SIGNIFICANCE OF THE STUDY

The findings of the study will benefit the students, the teachers, the school administration; parents and curriculum developers among others. Students of both gender; boys and girls will be able to know the need for physics for their future careers like engineering and technology.

The teachers will benefit from this study by being made aware of the current general performance in physics at school level and the possible reasons for poor performance.

The school administrators like principals, subject heads of department (H.O.Ds and D.E.Os) will understand the status. Parents will realize the need for more learners enrolling in physics and so will help in counseling.

In the same way it will help curriculum developers, they will be made aware of the performance which may help in any changes to be made in the curriculum.

School counselors are also going to benefit from this study. They will be able to give necessary advice to the students who are their clients.

The findings of the study outline the key milestones in the education development programme to all stakeholders in a coherent manner.

It presents to the government the need for continuous critical review of the education sector activities, and negotiation among stakeholders.

The findings provide a basis for resource allocation and targeting to provide a frame work for planning implementation and performance evolution.

2.5. OBJECTIVES

This research study gives information about the power of gender differences in number of context with following objectives.

General objective

Students interest and academic performance in physics in Milani High School, Webuye Division, Bungoma, Kenya.

Specific objectives

1. Determine the profile of the respondents in
 - 1.1. Age
 - 1.2. Gender
 - 1.3. Academic level
2. Determine the level of students' interest in physics:

2.6 NULL HYPOTHESIS

There is no significant relationship between students' interest and academic performance in physics.

CHAPTER THREE

Research methodology.

3.1 Design:

The descriptive method of research has been employed in this study because it is convenient due to the time available.

3.2 Instruments

Use of questionnaire which was prepared for the participant students to fill in the required information for the study.

Personal observation as away of confirmation or justifying the collected information by physical counting of numbers of students attending physics lessons.

Interview method has been used where students were not reached by interviewing physics subject teachers or school administration or inquiry into school records.

3.3 Environments.

This study has been conducted in Milani High School which is located in Webuye division ,Bungoma district, Kenya.

This is a District school which is mixed with almost equal number of boys and girls. The school has 14 teachers and 165 students. From Kampala University to reach the school one has to travel to Malaba boarder of Kenya then follow the route to Bungoma town the school is about 60km from Bungoma.

3.4 Respondents

This study included all the students of Milan high school a population of 165 students. Where information was not obtained from students, subject teachers were interviewed or administrators

3.5 Scopes

The geographical scope of this study had been in Kenya, Bungoma district, Webuye Division. Bokoli location, Milan High School.

The school is 12km from Malaba-Webuye highway and has a total population of 165 students and 14 teachers.

The time scope for this study was one month due to the time available between the starting and the graduation date.

3.6 Statistical treatment of data.

Since it is descriptive, it did employ frequency tables and percentages for data analysis.

CHAPTER FOUR

4.1. DATA PRESENTATION AND ANALYSIS

Introduction

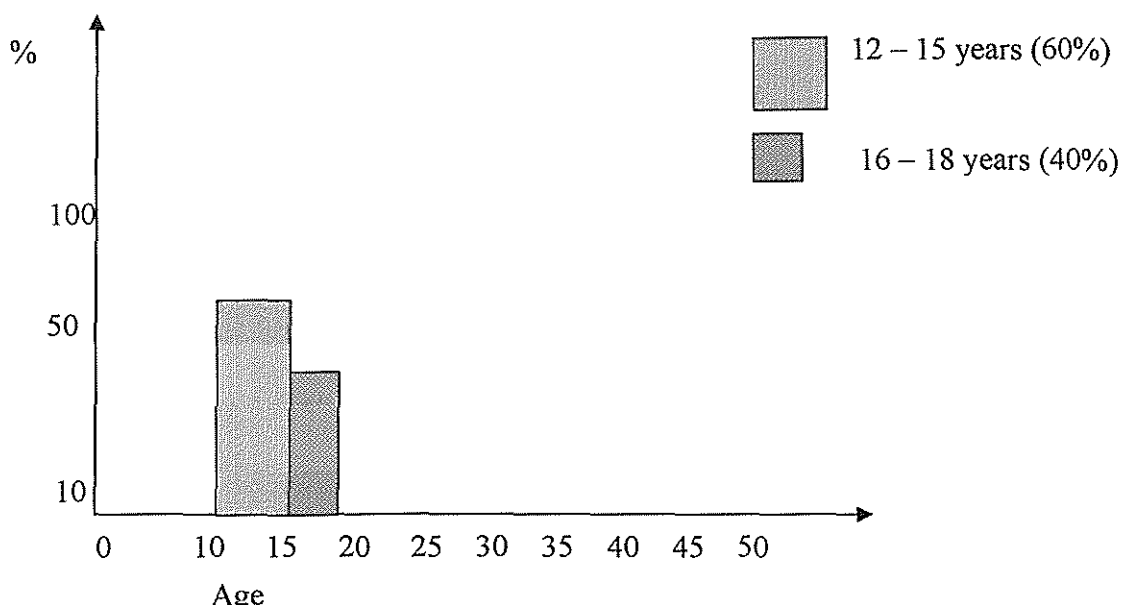
In this study, we have found the finer relationship between the level of interest and performance. Since we live in a world that is increasingly dependent on physics and fueled by break through in physics research, technology continually advances we are beginning to answer questions about the beginning and the end of the universe and we are discovering amazing things about the interaction of sub atomic particles.

The data collected using questionnaires on age, gender, motivation and performance in physics is analyzed using tables, percent ices and pie charts.

4.2.1. Presentation of Data on age

Table 1

Years	No. of students	Percentage
12-15 years	100	60
16-18 years	65	40
Total	165	100

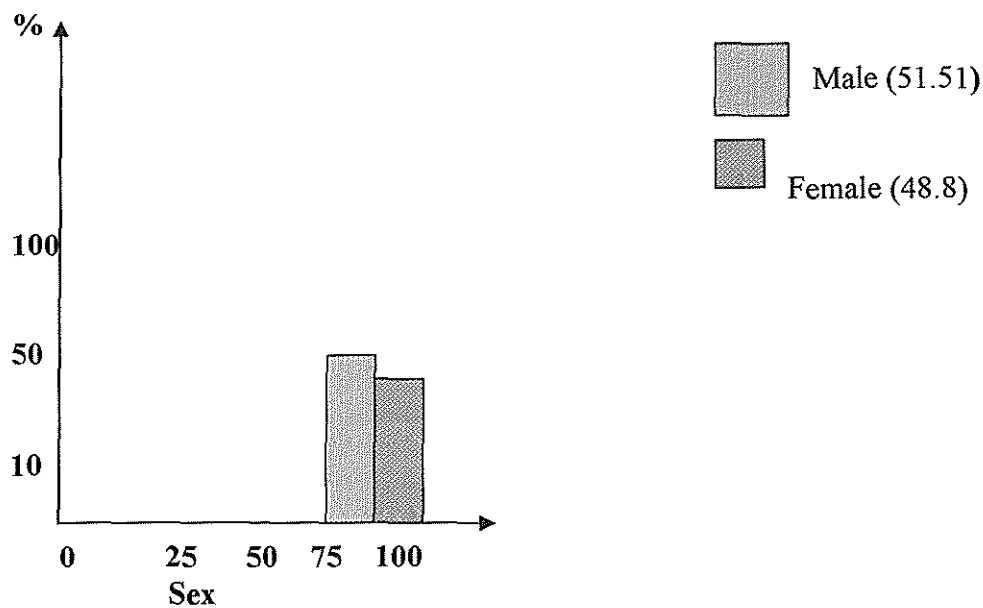


From the table and the bar-graph above, it is clear that most students at high school who participated in this study are of age 12 to 15 years (60%) and only 40% above 16 years.

4.2.2. Presentation of data on Gender

Table 2

Sex	No. of students	Percentage
Male	85	51.51
Female	80	48.48
Total	165	100



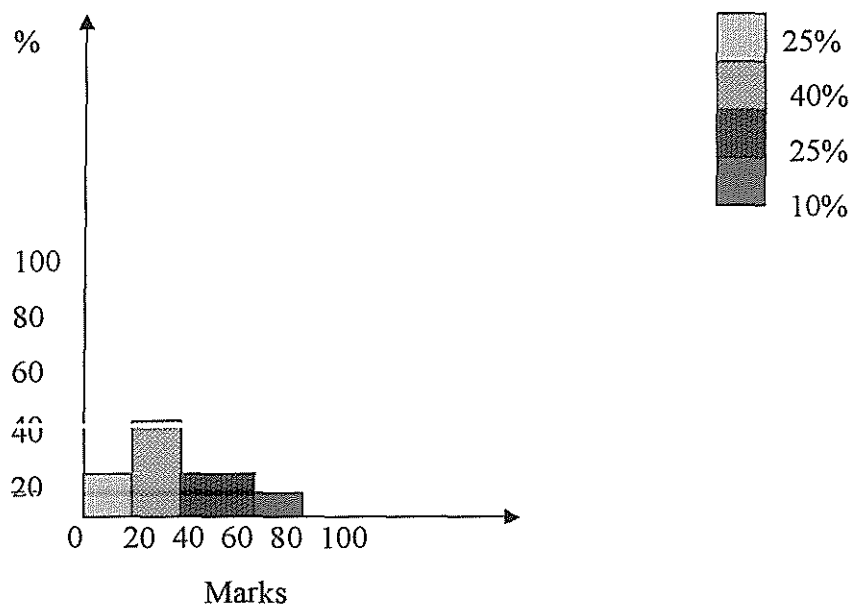
The explanation from the table and bar-graph above tells us that out of 165 students of the Milani High School, 85 are boys and 80 are girls making 51.51 and 48.48 percentages respectively.

It is clear that females are fewer than males at this level indicating that fewer females take physics as a subject. The implication is that a few girls take physics, few of them will take physics related to careers. This is according to this study findings.

4.2.3. Presentation of data on Performance in physics and interest.

Table 4

Range (marks)	Percentage
0-20	25.00
21-40	40.00
41-60	25.00
61-80	10.00
81-100	00.00



From table four above which shows the ranges of marks scored by students in their previous physics exam just before this study.

It clearly indicate that most of the students score between 21 to 40 marks. This makes a total percentage of 40 but only 10% of the students managed to score 61 to 80 percent.

Therefore, it is clearly observed that most students score below average i.e below 50%

Therefore, we have observed that the poor performance in physics is due to low level of interest in the subject.

More so, none of the students managed to score above 80% thus none got an 'A'

Therefore, among all these students none can take engineering as a career.

Since therefore performance is bond on interest the people concerned should try their level best to create interest among the students.

CHAPTER FIVE

5.1. Discussion on age, Gender and Academic level.

According to the findings, most students are in the age bracket of 12-15 years of age at high school level at Milani High School. It is clear from the findings that 100 of the students who participated in this study out of 165 were between 12-15 years. This is the age bracket of most adolescents. This is the age at which most of them can make a choice of the subjects to study and their future career.

Most students in this study were boys with 51.51% while girls were 48.48% involved in this study.

From the study, 42 were in the first form, 50 in the second form, 46 in the third form and 37 in the fourth form making a total of 165 students.

Discussion on Performance in physics and interest.

From the previous exam, 25% had scored 0-20 marks, 40% had scored 21-40, 25% had a score ranging between 41-60 and only 10% had scored 61-80marks. None of the students involved in the study had above 80marks.

5.2. LIMITATIONS OF THE STUDY

In this study, one of the main limitations was time. The time available was limited that the researcher was not in position to maximize the field areas.

Another limitation was the resources i.e. finance. It has been hard to find enough money to do all the required applications and movements.

Reference materials have been another limitation which made it not easy for the researcher to get necessary literature review and many other minor limitations.

5.3. RECOMMENDATIONS

The schools should buy more books for physics as one of the ways to improve physics, and also equip the lab for experiments and use of visual aids like videos to create more interest.

The employer (T.S.C) should employ more physics teacher for each school to have a variety of teachers to develop interest in physics learning physics teachers should be slow in teaching and create extra time for slow learners.

The physics teachers should be friendly to students and avoid any harsh responses to students.

Physics teachers should be role models to learners and form subject slogans parents should encourage learners to study physics and counselors should be on the lead in encouraging students to study physics.

Teachers should be exchanged i.e one teachers to teach more than one school for motivation and also work for famous physics should be published in newspapers.

5.4. CONCLUSION

The first phase of this research intended to identify what factors positively influence students who show an interest in physics. It was initially discovered that teachers and professors have the single largest influence on students who show an interest in physics. Family members and famous physicists also had a strong amount of influence but student peers had very little influence on that student's positive interest in physics. When asked any other factor that contributes to their living and dislike for physics, it was discovered that, friends, classmates, and siblings would describe physics as overly difficult.

This predisposed level of difficulty is what causes so many people to turn away from physics before they have even had the opportunity to enroll in a physics class. If we can find way to dispel the rumors about how physics classes are excessively challenging, we will give more people the chance to become more familiar, with the world of physics and everything it can offer.

Every group that was studied identified teachers as the largest source of positive encouragement towards physics.

The only way to increase the amount of scientific literacy in our society is through the hand word of educators.

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PENDICES

PENDIX A

TRANSMITTAL LETTER

WAFULA N. EDWARD,
MILANI HIGH SCHOOL,
P.O BOX 86,
BOKOLI – BUNGOMA.
KENYA
25TH JUNE 2007

THE PRINCIPAL,
MILANI HIGH SCHOOL,
P.O BOX 86,
BOKOLI – BUNGOMA.
KENYA

Dear Sir/ Madam,

RE: REQUEST TO CONDUCT A RESEARCH STUDY IN YOUR SCHOOL

I have a requirement for my study which leads to an award of a Degree in Education Science, I would like to request to be allowed to use your school as a case study for my research.

My research is on: STUDENTS' INTEREST IN PHYSICS IN MILANI HIGH SCHOOL. I would like to conduct my research from 20th July, 2007 to 20th August, 2007.

I am hoping to get a positive response from you.

Yours faithfully,


EDWARD NYONGESA WAFULA
REG. NO:- BED/ 1010/ 42/ DF
KAMPALA INTERNATIONAL UNIVERSITY

APPENDIX B

Questionnaire on interest in physics

Name (optional) Gender:.....

Age: Academic Year:.....

You have been specifically selected to participate in the study about students interest in physics. Your contributions will help much towards the success of the study and will be treated with the highest level of confidentiality.

Please look at each question and rank your response. (for the response that best describes you).

1. When you hear the word "Physics" how do you respond?
☐ a) I'm scared to death of physics.
☐ b) I think physics is boring.
☐ c) I'm interested in physics but I'm little scared of the difficult.
☐ d) I think physics is really interesting.
☐ e) I like physics so much, I want to be a physicist.
☐ f) Other _____
2. If you are scared of physics or dislike physics at all, why do you feel this way?
☐ a) I was told that physics is really boring.
☐ b) I was told that physics is really hard.
☐ c) I'm not very good at Math and I'm told that physics is just a lot of math.
☐ d) I took physics and thought the concepts were difficult.
☐ e) I took physics and thought it was boring
☐ f) I took physics and had trouble with math.
☐ g) Other. _____
3. Who influenced this negative opinion in physics?
☐ a) Teacher or professor.
☐ b) Your fellow classmates or siblings.
☐ c) Parents or other family (besides your siblings).
☐ d) Famous person or political figure.
☐ (Names) _____
☐ e) Other. _____
4. If you have a positive opinion towards physics at all, why do you feel this way?
☐ a) I've enjoyed the physics classes I've taken.
☐ b) I've enjoyed participating in organized activities like science fairs.
☐ c) I currently have or used to have a science hobby (Ex model rocketry).
☐ d) I really enjoyed a book I read on physics (If so, which Book? _____)
☐ e) I've been inspired by trips to science museums or research facilities.
☐ f) Other _____

Who inspired this positive feeling in physics?

- ☐ a) Teacher
- ☐ b) Your fellow classmate or siblings.
- ☐ c) Parents or other family (besides your siblings).
- ☐ d) Famous person or scientist (Names) _____
- ☐ e) Other _____

4. What was your score in physics in the latest physics exam you did?

- ☐ a) 0 – 20%
- ☐ b) 21 – 40%
- ☐ c) 41 – 60%
- ☐ d) 61 – 80%
- ☐ e) 81 – 100%

Thank you for taking your time to answer this questionnaire.

APPENDIX C

SAMPLE TABLE

CLASS/ FORM	I		II		III		IV	
GENDER	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRL
Number of those who choose physics.								
Percentage representation								
Totals								

APPENDEX D

DEFINATION OF TERMS

For the purpose of this study, the following terms are defined operationally.

Students interest: - This is a person liking or desire for something that attracts you. In this study students interest is used to mean students liking.

Academic performance:- This term in this study will mean class achievement or score in subject i.e. physics.

Physics:- This is one of the subjects learned in High schools. It is one of the sciences.

CURRICULUM VITAE (CV)

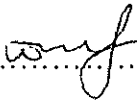
ME: WAFULA EDWARD NYONGESA
DRESS: FRIENDSSEC. SCHOOL MILANI BOX 86 – BOKOLI
TIONALITY: KENYAN
TE OF BIRTH: 24TH MAY 1978
ACE OF BIRTH: BUNGOMA DISTRICT
ARITAL STATUS: UNMARRIED
AME OF EMPLOYER: TEACHERS SERVICE COMMISSION

EDUCATIONAL BACKGROUND

<u>YEARS</u>	<u>COLLEGE/ SCHOOL</u>	<u>CERTIFICATE</u>
2005 – Present	Kampala International University	Pursuing B.ED (SC)
2000 – 2002	Kagumo Teachers College	Dip. Education
1995 – 1996	BWAKE Sec. School	K.C.S.E
1993 – 1994	Teremi High School	
1985 – 1992	Marobo Pri. School	K.C.P.E

WORKING EXPERIENCE

<u>YEARS</u>	<u>SCHOOL</u>	<u>POST/ GRADE</u>	<u>No. OF YRS</u>
2003 – Present	Milani Sec. School	DIP. Ed	5
1998 – 1999	Kenya Seed Company	Casual Worker	2

Sign: 

Date: 19th June , 2007