FACTORS CONTRIBUTING TO THE PERFORMANCE IN PHYSICS BY GIRLS IN MAKUYU DIVISION, KENYA

BY

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DECLARATION

I, Mwaura Harrison Njoroge declare that this project is my original work and has never been presented to any other university for award of any academic certificate or anything similar to such. I solemnly bear and stand to correct any inconsistence.

Signature

MWAURA HARRISON NJOROGE

DATE :

28/6/08.

APPROVAL

This is to acknowledge that this Report has been under my supervision as a university supervisor and is now ready for submission.

SIGNATURES **DATE**

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.....

MR. OCHEN MOSES

DEDICATION

This work is affectionately dedicated to my dear wife Ann Wangechi for her support patience and understanding during this period of study not forgetting all those who constantly wished me success.

AKNOWLEDGEMENT

My gratitude first goes to God who has given me the strength and courage to undertake this research.

I also owe a lot of appreciation to all those who assisted me in carrying out this research. I am grateful to my supervisor Mr. Ochen Moses who tirelessly went through my work and inspired me to dig deeper into the core of the matter. His kind criticism, patience and understanding, assisted me a great deal.

I am indebted to my friends who gave me encouragement in time of difficulties. Thanks also go to all those lecturers who impacted professionalism into my work.

I wish to thank my family for their love, financial support and inspiration during my stay in Kampala International University (K.I.U).

Finally, I would like to thank all my respondents and those within a short notice without which this work would not have been possible.

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ABSTRACT

The purpose of this study was to investigate the affecting the academic performance of female students in physics in the selected schools of Makuyu Division.

The specific objectives of the study were to investigate some factors responsible for the female students' academic performance in physics.

The methods used for data collection were questionnaires and interview guides to gather information on the academic performance in physics.

The findings revealed that discipline, Quality of teachers and school facilities affect academic performance of girls in physics in the selected schools of Makuyu Division.

The study recommended the government to have a policy in place that encourages retaining teachers in upcountry schools; where government should consider introducing upcountry allowance in the remuneration scheme of physics teachers among other recommendations.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

On attainment of political independence in 1963, the Government of Kenya (GoK), households and the private sector collectively endeavored to enhance the development of education in the country. The rapid development of education and training in Kenya was an aftermath of the Sessional Paper No. 10 of 1965 on African Socialism and its Application to Planning in Kenya, which emphasized combating ignorance, disease and poverty. It was based on two long-standing concerns that: (i) every Kenyan child, irrespective of gender, religion and ethnicity, has the inalienable right to access basic welfare provision, including education; and (ii) the GoK has an obligation to provide opportunity to all citizens to fully participate in socio-economic and political development of the country and also to empower the people to improve their welfare.

Development of education since independence has been marked by various changes and challenges. For nearly four decades therefore, the sector has undergone several reviews by special commissions and working parties appointed by the government, with the aim of improving efficiency and effectiveness of the education provision.

The pertinent policy question arising here is: How can the GoK satisfy the increasing demand for the limited number of secondary school places in order to enhance access and participation in secondary education, against the background of negative effects of the cost-sharing strategy in education?

1.2 Problem Statement

While education is considered to be a basic right and need, the enrolment of students in physics in Kenya has been sluggish due to several bottlenecks: (i) declining access and participation rates, as indicated by declining gross enrolment rates (GER); (ii) differential trends in access and participation in secondary education, with low participation of the poor and vulnerable groups and widening gender and regional disparities, particularly in the ASAL, amidst concerns over equity promotion; (iii) poor performance in sciences, mathematics and languages; and (iv) high wastage: declining completion rates, low survival levels from primary school to university, and low female enrolment in science and technical courses. This study there for sought to investigate and find solutions to the problem of poor performance in physics by girls.

1.3 Objectives of the study

1.3.1 General: This study was to investigate the effects of poor performance of girls in physics in Makuyu Division, Murang'a south district, Kenya

1.3.2 Specific: this study sought to

1. determine the profile of respondents as to;
   Age
   Gender
   Academic level
2. Investigate some factors responsible for the low enrolment of girls in physics.
3. Make recommendations that can help solve the problem

1.4 Research questions

1. What are some of the factors responsible for the low enrolment of girls in physics?
2. What are some of the recommendations that can help solve the problem?

1.5 Scope of the study

The study was carried out in Makuyu Division in Murang'a South District Kenya. The study was limited to the objectives of the study. Any other aspect of the topic was not investigated.

1.4 Significance of the study

This study will benefit the following disciplines:

Provide information that can be used by Ministry of Education policy makers to identify the causes of the low enrolment of students in physics in order to come up with policies that will avert the situation.

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

It will also contribute to the existing literature about better education service delivery and provoke further research in this field.

CHAPTER TWO

LITEATURE REVIEW

Various writers have come up with views about the characteristics of competent teachers and benefits of having such teachers as follows:

Craig et al 1998, holds the view that the quality of the teachers' performance determines the students' achievement. Factors such as the year of teacher training, the teachers verbal fluency, subject matter knowledge, having books and materials, knowing how to use them, teacher expectation of pupil performance, time spent on classroom preparation and frequent monitoring of student progress determine the quality of performance of a teacher.

Regardless of the training, the experience and the preparation undergone, a teacher should have adequate motivation to teach. Lack of incentives in schools and small salaries offered to teachers compel them to work in many places to make ends meet. This renders many teachers ineffective at their work.

The common wealth Report 1974, explains teacher competence as having a knowledge of child development, of the material to be taught and suitable methods, his skills must enable him to teach, advice and guide his pupils, community and culture with which he is involved; his attitudes should be positive without being aggressive, so that his examples are likely to be followed as he transmits explicitly, and implicitly the national aims and moral and social values.

In support of this, Konchhar 2000, contends that discipline problems cannot be prevented yet most of them will not arise in the classroom of

intelligent, hardworking, teachers who plan their work effectively, motivate their students skillfully and provide a friendly climate.

Rayns 1969, holds the view that, "Teaching is complex and many sided demanding a variety of human traits and abilities. These may be grouped into two, first those involving the teacher's mental abilities and skills, his understandings of psychological and educational principles and his knowledge of general and specific subject matter to be taught and second; those qualities stemming from the teacher's personality, his interest attitudes and beliefs, his behaviour in working relationships with pupils and other individuals and the like".

In time with these views, Brinkerhott and white 1988, argued that teachers have the authority to control what goes on in classrooms and that authority must be established with each separate class. Some teachers are unable to do this; their classes run wild and their students terrorize them.

Anderson, et al 1992, contends that nothing is more critical to the quality of school than its staff. Teachers contribute to the whole development of children both inside and outside the classroom and not simply through the transmission of information and skills. Teachers need to interact with children even outside class. This instills confidence among the children in dealing with the teacher and enhances free interaction even in class.

Hargreaves and Fullan 1992, hold the view that on top of having deeper knowledge of and confidence in teaching their subject(s), the teacher should know how to teach mixed ability classes and how to respond to different learning styles of their pupils.

It's from the above many; writers give many characteristics and qualities, which effective teachers should posses. There are many students who perform well without teachers in some subjects while others will well-qualified teachers perform poorly. The researcher therefore aims at establishing the effect of teacher competence on academic performance of students in secondary schools.

The success or failure of secondary schools is measured against the presence or absence of structures and facilities provision and management. Nsubuga 1977, holds the view that an important element of a good school is that of facilities. He emphasizes that a good school should have adequate facilities which help with teachers and pupils to effectively teach and effectively learn in a convenient and comfortable environment.

According to Kochhar 2001, physical facilities contribute a lot to the general atmosphere of the school. He suggests that healthy surroundings, good sanitary arrangement leave little scope for irritation. Adequate library and reading room facilities, special room for different subjects, common room and so will keep the children busy and away from indiscipline.

Musaazi (1982) and Ssekamwa 2000, agree that most programmes of instruction and pupil services require some physical facilities such as school building, school grounds, enough desks, chairs, teaching materials and laboratories needed in instruction and incidental to institution. The possession of adequate facilities in the school for studying is a characteristic of an effective school.

CHAPTER THREE

METHODOLOGY

3.1 Research Design

The research explored the secondary schools in Makuyu Division using descriptive survey to investigate reasons leading to poor performance of girls in physics. The researcher used questionnaires and an interview guide to collect the data, summarize, present and interpret it.

3.2 Environment

The study was carried out in selected schools of Makuyu Division, Murang'a south district in Kenya.

3.3 Instruments

A researcher devised instrument through questionnaire and attitudinal scales (Likert scales) were utilized to collect data. The questionnaire consisted of both open ended and closed ended questions. The items sought to provide information on enrolment of girl students in physics. The KSCE examination scores of students in physics in the year 2007, per School for the class taught by physics teacher were used to measure performance.

3.4 Data Collection Procedures

The researcher obtained an introductory letter from the institute of continuing and distance studies. This enabled the researcher to go to the field to carryout the study. The researcher personally distributed questionnaires to teachers, students and interview the officials.

3.5 Statistical Treatment of Data

The data collected using the questionnaire was coded manually. The data was organized under different variables and then frequencies were established percentages and ratios were calculated to allow the use of descriptive statistics. Both bar charts and graphs were used to compare girls performance using the following formula;

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

Where F = number of respondents

Observed

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Discipline in schools and academic performance of physics by girls

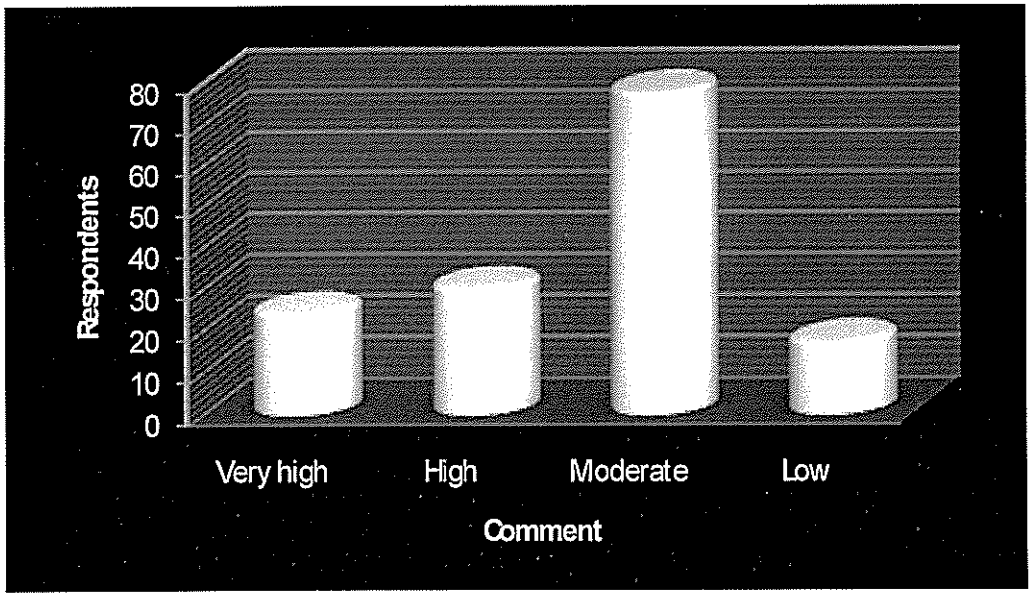
When the students and teachers were requested to respond to the question on what they considered to be the level of discipline in their school, the following were the results.

Table 1: The level of discipline in the school

Comment	Number of respondents
Very high	24
High	30
Moderate	78
Low	17
Total	**149**

Source: Primary data

Figure 1: The level of discipline in the school



Results from Table 1 and Figure I show that students and teachers had different views about the level of discipline in their schools. However, quite a small number respondent that the level of discipline was very good which represented 16.1% of the total number of respondents. Majority were of the opinion that discipline was moderate or low (65.8%).

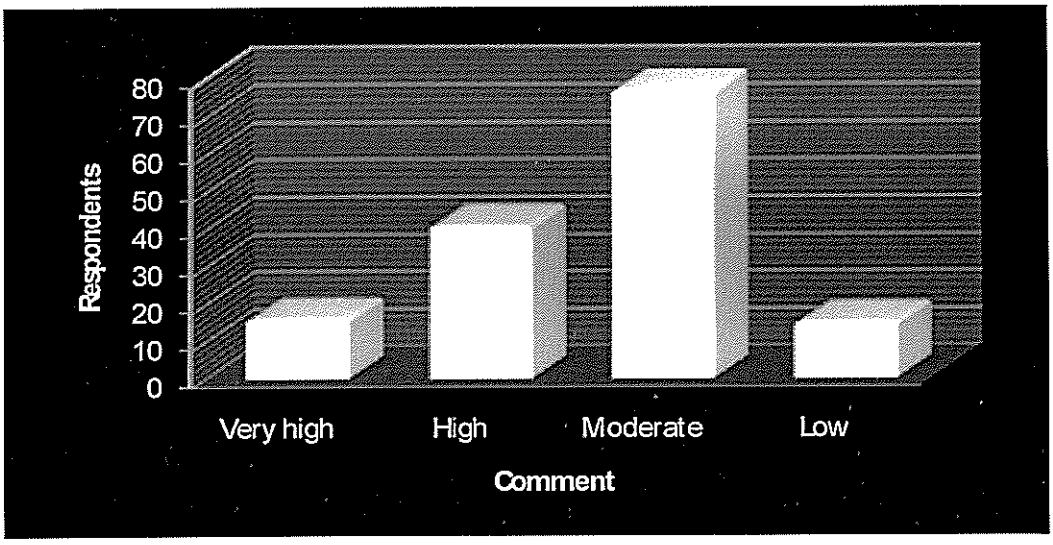
The responses about the level of academic performance in schools judged at national level were as follows:

Table II: Level of academic performance in physics by girls in the school.

Comment	**Number of respondents**
Very high	16
High	41
Moderate	77
Low	15
Total	**149**

Source: Primary data

Figure II: Level of academic performance in physics by girls in the school.



The results were statistically significant. The students and teachers had different views on the level of academic performance in physics of their schools judged at national level. Those who stated that performance in physics was very high or high were 38.3% while those who were of the view that performance was moderate or low were 61.7%. These meant that the majority of students and teachers recognize the importance of discipline visa avis academic performance in physics by girls.

Table III: Combining table I and II the results are as follows.

Comment	**Level of discipline in school**	**Academic performance at national standards**
Very high	24	16
High	30	41
Moderate	78	77
Low	17	15
Total	**149**	**149**

Source: Primary data

From table III, the researcher established that responses on discipline and academic performance moved in the same direction.

A big number of respondents whose responses on moderate and low discipline tallies with an equally big number of responses on academic performance. This implies that when discipline is moderate or low (63.8%), academic performance is equally moderate or low (61.7%). Conversely when discipline is very high on high (36.2%) academic performance is equally very high or high (38.3%).

Students were asked to state the most common types of indiscipline in their schools and the responses were as follows;

Table IV: Types of indiscipline in schools

Comment	Percentage
Late coming	40.1
Dodging classes	30.0
Escaping from school	25.3
Disrespect for teachers	3.6
Others e.g. vandalism Immorality, bullying, drug abuse, noise making.	1.0
Total	**100%**

Source: Primary data

The research established that late coming, escaping from schools, dodging classes are indiscipline cases common in the schools. From Table IV, it can be observed that most types of indiscipline are associated with deviance from schools routine represented by 95.4%. This includes late coming (40.1%), dodging lessons (30%), and escaping from school (25.3%). Only 4.6% are other types of indiscipline. Students miss a lot of teaching going on in school and this directly affects their performances especially in physics.

4.2 Quality of teachers and academic performance in physics by girls.

To establish the effect of quality of teachers on academic performance in physics in the schools, a number of items were included in the questionnaire that required head teachers to state the teachers in each school and their qualification.

Table V: Qualification of physics teachers

School	**Graduate teachers**	**Diploma teachers**	**License teachers**	Total
A	10(40%)	15(60%)	-	25(32.5%)
B	10(52.6%)	9(47.4%)	-	19(24.7%)
C	1(8.2%)	9(75%)	2(16.7%)	12(15.6%)
D	8(38.1%)	13(61.9%)	1(48%)	21(27.3%)
Total	28(36.4%)	46(59.7%)	3(3.9%)	77(100%)

Source: Primary data

According to EPRCR (1992) both graduate and diploma teachers are qualified to teach physics in secondary schools. Only 3.9% of teachers do not have the teaching qualification.

However, all the four head teachers pointed out that although the available physics teachers are qualified they are not enough to effectively handle the large numbers of students.

Responses about the experience of physics teachers were as follows;

Table VI: Experience of physics teachers

	Frequency	**Percentage**
Less than 2 yrs	43	55.8
3-5yrs	10	13.0
6-8yrs	9	11.7
Above 8yrs	15	19.5
Total	**77**	**100%**

Source: Primary data

The results show that 68.8% have experience of less than 5yrs of teaching while 31.2% have more than 5yrs of teaching.

To establish whether the limited experience has any effect on the quality of teaching, questionnaire were administered to Heads of departments and students. A number of observations were also made to assess the performance of teachers during the teaching learning process.

The questionnaire for heads of departments required them to assess their teachers in as far as quality teaching is concerned. The responses were in table VII below;

Table VII: Rating of Heads of departments about physics teachers

Item	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**	**Total**
Preparation of schemes of work	11	30	2	1	44
Giving exercises	12	28	2	2	44
Marking exercise	9	14	21	0	44
Making corrections with students	9	33	2	0	44
Completion of the syllabus	5	32	5	2	44
Total	**46**	**137**	**32**	**5**	**120**

Source: Primary data

The table VII shows the responses of Heads of Departments about the performance of physics teachers in the four schools.

93% of the heads of departments were of the view that physics teachers make preparations for teaching while 6.8% commented that teachers don't make adequate preparations for teaching.

Students were also asked to assess the quality of physics teaching in their schools. The results are shown in table VIII below;

Table VII: Students rating of physics teachers' performance

Item	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**	**Total**
Explanation of subject matter concepts	15	12	2	1	30
Giving exercises	5	17	5	3	30
Making exercise	10	12	6	2	30
Making corrections	5	17	5	2	30
Free interaction with students	9	14	5	1	29
Total	**44**	**72**	**23**	**8**	**149**

Source: Primary data

Results from table VII show that 90.48% of the students were of the view that teachers explain the subject concepts thoroughly on the other hand 9.52% responded that the explanations of subject concepts were not clear. 74.29% indicate that teachers give exercises in class while 25.71% were of the view that teachers don't give exercises in class. Also, students revealed that 81.9% of the teachers mark exercise while 18.1% do not mark exercises. 72.4% of the students further held the view that teacher make corrections after making the exercising while only 27.6% did not.

This therefore means that students were satisfied with the quality of teaching.

4.3 Facilities in school and academic performance in physics

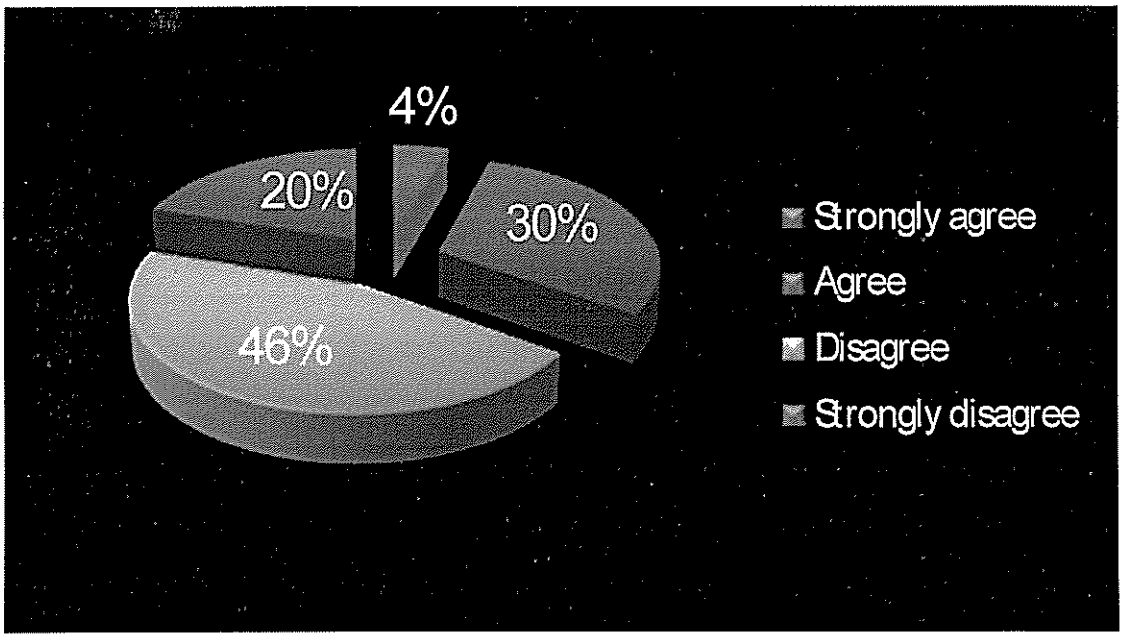
The students head teacher and heads of department were requested to rate the adequacy of facilities in schools for teaching and learning physics. The results were summarized and presented in the table IX below.

Table IX: Rating of adequacy of facilities for physics in schools.

Rating	**Frequency**	**Percentage**
Strongly agree	7	4.5
Agree	47	30.1
Disagree	71	45.5
Strongly disagree	31	19.9
Total	**156**	**100%**

Source: Primary data

Figure III: Rating of adequacy of facilities for physics in schools.



The responses were from 109 students, 44 teachers, 4 head teachers and 5 directors of studies.

From table IX the respondents who were of the view that the schools had adequate facilities for teaching and learning physics were 34.6%, while those who were of the view that the physics facilities were not adequate were 65.4%.

Interviews with head teachers revealed that schools depend mainly on fees from parents which is not even paid on time. Any capital developments in these schools are done from the fees raised. Most of the parents are poor and cannot afford high fees for their children especially girls.

Students also pointed out that they lack important facilities like computers in their schools. Therefore they are not kept abreast of the innovations, inventions and current issues important for academic work. This puts them at a competitive disadvantage in relation to those students who use internet and other facilities to access information which is not available in text books.

From the questionnaire responses, interviews and observations, there are limited facilities in schools. Lack of facilities for teaching and learning is negatively affecting the academic performance of these schools.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter deals with the summary of the findings, conclusions and recommendations. These are presented according to each of the objectives for purposes of being systematic.

5.1 Summary

5.1.1 Discipline of female students and academic performance in physics

Students and teachers were asked about the level discipline of students in their schools. The respondents had different views about this issue. 36.2% were of the view that discipline was high while 36.8% were of the opinion that discipline was low. The respondents also had varying views about the level of academic performance in physics in their schools. 38.8% were of the view that the level of academic performance in physics was high or very high while 61.7% were of the view that academic performance in physics was moderate or law.

5.1.2 Quality of physics teachers and Academic performance in physics

The physics teachers were found to be 36.4% graduate, 59.7% diploma holders. Only 3.9% were licensed teachers. Therefore 96.1% of the teachers have the required qualifications to teach physics.

83.18% of the teachers commented that the teaching of physics is done satisfactorily while 16.82% were of the view that the teaching of physics is poorly done. 77.5% of the students had the view that the teachers perform well in class while 22.5% commented that the quality of teaching

mathematics was not good. The results were therefore statistically significant that physics teachers perform their work well.

5.1.3 Facilities in schools and Academic performance in physics

Students, teachers and head teachers were asked to rate the adequacy of physics facilities in their schools. 34.6% responded that facilities were adequate and 68.4% commented that facilities were inadequate.

5.1 Conclusions

The following conclusions were generated from the findings of the study.

The results obtained indicate that when female students are indiscipline the time for the study is disrupted and wasted. This greatly affects academic performance in physics.

Secondary school teachers in Makuyu Division are qualified and perform their work well. Therefore the poor academic performance in physics by girls is not attributed to the teachers.

The schools in Makuyu Division were found to have limited facilities for physics and this contributes to the poor academic performance. The schools with more facilities obtain better quality results than those with fewer facilities.

5.2 Recommendations

As a result of the above conclusions, the researcher finally makes the following recommendations to the various stakeholders.

Female students should be encouraged to work hard by providing scholarships to the best students in physics in class. This will encourage competition among the students.

Some of the schools can be made partly day and partly boarding to cater for students who come from far and can afford boarding fees. This could reduce on late coming and escaping from school by especially female students.

More meetings between school administrators, teachers, students and parents should be organized to sensitize the parents about their roles in disciplining their children.

To retain teachers in upcountry schools, government should consider introducing upcountry allowance in the remuneration scheme of teachers.

Government should provide more physics teaching learning facilities in schools to make the learning environment more attractive to students and teachers.

Computer facilities with internet should also be provided in schools so that students can access information relevant to their studies and to expose them to what is happening in the world like their counter parts in other schools.

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APPENDICES

QUESTIONNAIRES

Questionnaire for Heads of Department

Please answer freely and sincerely in the spaces or tick the most appropriate alternative where applicable. The information required is only for academic purposes in a research undertaking. Your response will be taken as confidential as possible. Thank you.

1. Age

   a) 20-25 ☐ b) 26-30 ☐ c) 30-35 ☐ d) 36-40 ☐

   e) Above 40 ☐

2. Sex

   a) Male ☐ b) Female ☐

3. Highest qualification attained

   a) Certificate ☐ b) Diploma ☐

   c) Degree ☐ d) Other ☐

4. State whether you are a

   a) Trained teacher ☐ b) Licensed teacher ☐

5. How long have you taught in this school?

   a) 1-3yrs ☐ b) 4-6yrs ☐ c) 7-9yrs ☐

   d) 10yrs and above ☐

Please indicate the number that is appropriate to you or your situation on the right side boxes using the rates given below;

Strongly agree	Agree	Disagree	Strongly disagree
4	3	2	1

	Item	Response
1.	Physics Teachers in this school make schemes of work and lesson plans before going to teach.	
2.	Physics Teachers in this school give exercises while teaching.	
3.	Physics Teachers make corrections in class with students after marking exercises.	
4.	Physics Teachers in the school interact freely with students in class.	
5.	Students in this school are committed to studying Physics.	
6.	Physics Teachers in this school cover the designed syllabus adequately and in time to allow for revision by students.	
7.	This school has adequate facilities for teaching and learning Physics.	

8. What types of indiscipline commonly occur in this school?

   .....

   .....

9. What do you consider to be the cause of indiscipline in this school?

   .....

   .....

10. In your view how can the academic performance in physics by girls in your school be improved?

.....

QUESTIONNAIRE FOR STUDENTS

Please kindly spare your valuable time. Respond the following questions. The information is solely for academic purposes. You are assured that the information / answers given shall be treated with utmost confidentiality therefore do not disclose or write your name on the questionnaire.

Background information

1. Age

   a) 20-25 ☐ b) 26-30☐ c) 30-35 ☐ d) 36-40 ☐

   e) Above 40 ☐

2. Sex

   a) Male ☐ b) Female ☐

3. Class

S.1 ☐ S.2 ☐ S.3 ☐ S.4 ☐

Please indicate the number that is appropriate to you or your situation on the right side boxes, using the rates given below.

Strongly agree	agree	disagree	Strongly disagree
4	3	2	1

(a) Discipline of female students and academic performance in Physics

1.	Students regard towards school regulations	
2.	The level of discipline in our school is low	
3.	Teachers concern towards discipline is low	

Types of discipline in your school

1.	Late coming	
2.	Escaping from school	
3.	Dodging classes	
4.	Acts of vandalism	
5.	Disrespect for teachers	
6.	Bullying of new students	

(b) Physics Facilities in school and academic performance by girls

1.	We have adequate furniture in classrooms	
2.	We have a library with relevant Physics books we use for academic purposes	
3.	The available facilities are adequate for studying Physics	