

Influence Of Students Characteristics On Performance Of Physics, In Kenya Certificate Of Secondary Education In Selected Public Secondary Schools, Laikipia County, Kenya

Elizabeth W. Ngari

Dr. Mwaura Kimani
Lecturer, Maasai Mara University

Dr. T. Njoroge Kinga
Lecturer, Kenyatta University

Abstract: The purpose of this paper was to address the following objectives to analyze the influence of student's attitude towards Physics and find out the influence of student gender on the performance of Physics in KCSE in Laikipia County. The ex post facto research design was adopted. All the 67 secondary schools in Laikipia County of which only 57 mixed public secondary schools were purposively considered. The study also targeted the immediate KCSE graduates (2013, 2014 and 2015) who had done Physics as a selected subject in their KCSE. Each year, there are approximately 513 students who had graduated having done Physics in KCSE. The study administered a questionnaire to the form four Physics teacher and 62 former candidates who did their Physics paper in KCSE. The data was analyzed with the aid of SPSS vs 20 and presented using tables and figures. The response rate was 73% for teachers and 90% of the student sampled. The study established that most of the students 62% had a negative attitude towards Physics. However, the attitude does not stay on. It was also noted that gender might not have any influence on the attitude of the students towards physics since 70% of the respondents disagreed with the statement. The study found that attitude builds by student's influence their learning abilities in a particular subject. Further the position and negative attitudes of student's themselves have been suggested as a contributory factor to misconceptions. A positive attitude from the teacher was also noted to have an effects on student's motivation, attitude towards school and school work, the student's self confidence and as a result personality environment. The study concluded that there is great need to enhance student motivation and improve their attitudes toward Physics. The results of this study concluded that teacher's characteristics involving general behaviors, knowledge, planning, and organization, teaching methods, personal relations and enthusiasm are important in the formation of student's' attitudes toward Physics. The study recommends that teachers should take first step towards improving student attitude towards Physics, that there should be school forums to encourage student's in understanding important of Physics, that both gender should be encouraged and given equal opportunities to doing Physics and that teachers should design their training methodology in a way to encourage high attitude toward Physics.

Keywords: Attitude, Gender, Performance and Physics.

I. BACKGROUND OF THE STUDY

Physics education is an important part of the foundation for many occupations (VanGorden and Slater, 2013) and consequently, the issue of performance and performance of girls in Physics has been a subject of discussion and research

globally (Farmer, 2013). The United Kingdom (UK), Dainton report of 1968 established that the number of boys studying physical science subjects beyond compulsory period far outweighed the number of girls. Physics is believed to be one of the oldest and probably the most developed of all the Sciences (Keith, 2015). It addresses the most fundamental

questions regarding the nature of the Physical universe. It asks questions such as; what is the nature of the universe? What is matter made of? What are the fundamental forces of nature? Among other like such. Because Physics is the study of these and other basic questions, it provides the underpinnings for all other physical sciences. 'The ultimate description of all physical systems is based on the laws of physical universe usually referred to as 'the laws of Physics' (Nathan et al 2015). Two dominant themes run through the development of Physics; (1) matter and energy (2) the search for order and patterns. Secondary school Physics is primarily concerned with the study of these two very important themes. One very important reason why Physics form part of the curriculum all over the world is due to its ability to give personal intellectual and physical skills, knowledge and value to the learner.

In learning Physics, student's acquire process and manipulative skills that enable them to predict accurately the outcome of various events such as the occurrence of the eclipse, effect of gravity and other forces and phases of the moon. A learner with a Physics background is able to think both deductively and inductively and approach new situations with a high degree of precision and accuracy. To achieve millennium development goals (MDGs) and realize vision 2030, quality teaching of Physics to more young learners has become even more critical. It is with this in mind that central province secondary school heads association came up 'effective 40' program to effectively manage the 40 minutes lesson and hence improve performance in all subjects; Physics included.

Despite the fact that Physics has made a significant contribution to life in today's society, a decline in performance of Physics as a subject has been registered over the years (KNEC 2005 to 2015). This trend is more significant especially in schools where the subject has been made optional. The performance of Physics like other sciences depends on the spatial ability of the learner (Twoli 2016). Given that boys exhibit higher levels of spatial ability, this may explain the reason why there is a higher performance in Physics among boys than girls in national exams (KNEC 2010). The socialization of boys among African societies is different from that of the girls. Boys perform more vigorous activities that require activation of the mind as opposed to girls who are subjected to light jobs such as housekeeping and cooking. This may explain the reason why boys are likely to develop a more positive attitude towards sciences than girls. According to KNEC (2007-2011), performance and performance of Physics among girls is always less than that of the boys. Performance of Physics in KCSE is always less than that of other science subjects namely chemistry and biology. This trend is even more significant among schools in rural areas than in urban areas (MOEST 2007). Likewise, student's in high performing schools are more likely to enroll and perform better in Physics than low performing schools

Gender differences in sciences such as Physics achievement are the smallest. Despite performing equally well as boys in most countries, girls tend to have a weaker self-concept in Physics than males, i.e., on average, girls had lower levels of belief in their Physics abilities than boys. Yet, both boys and girls are similarly interested in science; and there is

no overall difference in boys' and girls' inclination to use science in future studies or jobs. Reading, however, is considered important by far more girls than boys in all European countries. Gender is only one of the factors that affect achievement in various subject fields. Socio-economic status is a very strong factor; thus it is important to consider family background alongside gender when supporting children who are under-achieving.

Nevertheless, accepted social gender roles and expectations are so entrenched in our culture that most people cannot imagine any other way. As a result, individuals fitting neatly into these expectations rarely if ever question what gender really means. They have never had to, because the system has worked for them. Gender refers to the social attributes and opportunities associated with being male and female and the relationships between women and men and girls and boys, as well as the relations between women and those between men. These attributes, opportunities and relationships are socially constructed and are learned through socialization processes. They are context/ time-specific and changeable. (Gender Issues and Advancement of Women 2010). It determines what is expected, allowed and valued in a woman or a man in a given context. In most societies there are differences and inequalities between women and men in responsibilities assigned, activities undertaken, access to and control over resources, as well as decision-making opportunities. Brooks, (2016) cited the case of New Zealand in which although there has been increase in the number of women academic appointment into university post they observed that nature of post and level of appointment is disproportionate and in favour of men.

Attitude is the opinion and feeling that you usually have about something (Della Summers, 2013). Fasakin, (2012) recognized attitude as a major factor in a subject choice especially Physics, also considered attitude as a mental and natural state of readiness, organized through experiences exerting a directive influence upon the individual's responses to all objects and situation with which it is related. Erdemir, & Bakirci (2014) described attitude as tendency for individuals who organize thought, emotions, and behaviours towards psychological object.

Human beings are not born with attitudes they learn afterwards. Some attitudes are based on the peoples own experience, knowledge and skills and some are gained from other sources. However, the attitude does not stay the same. It changes in the couple of time and gradually. Gok & Silay, (2015) asserted that, Social psychologists have viewed attitudes as having three components: cognitive, affective and behavioral. They further opined that cognitive component is a set of beliefs about attributes of the attitudes object and its assessment is performed using paper and pencil tests. The affective component includes feelings about the object and its assessment is performed by using psychological indices. Finally the behavioral component pertains two the way in which people act toward the object and its assessment is performed with directly observed behaviour (Salta, & Tzougraki, 2014).

The differences in attitude of male and female towards Physics have been an issue in many countries. In response to this, many researchers have been carried with mixed reports.

Therefore, this research focused on the influence of attitudinal factors and student gender on performance of physics subject in Kenya Certificate of Secondary Education (KCSE). Every other time (K.C.S.E) results are announced there is a wild gesture about the poor performance in science more so in Physics especially in the few public secondary schools in Laikipia County (KNEC, 2011). Statistics from the education office shows that only one school has a substantial number of both boys and girls taking on Physics having 24 boys and 22 girls. The rest have minimal number of girls or no girls at all taking on Physics. Others have had no Physics students at all in the past three years. The performance of Physics in all other schools for the past three years have been dismal as indicated by the low mean grades of below 6.0. This means that Physics in Laikipia is highly neglected

A. STATEMENT OF THE PROBLEM

Despite equal education opportunities, there is growing evidence since 1990's that boys have continued to perform better than girls in Physics (Elimu, 2014). However, there is no evidence to suggest that girls and boys have any significant inherent differences in ability (Bennett, 2013). A review of literature by Zhu (2015) shows that Self-Efficacy (SE) is a successful predictor of student's course-taking although many other factors which are contextual variables have been reported to have influence on Physics Self-Efficacy (PSE). Although Physics subject is very importance especially in this modern age of science and technology, the subject is plagued by persistent low performance and poor performance of student's in schools (Balogun, 2015). In Public secondary schools in Kenya, Physics is a compulsory subject in the first two years of the secondary cycle and in most schools students opt to do without it in third and fourth year of secondary cycle. Various studies have been done to investigate the cause of low performance of Physics as a subject where gender has been the most scrutinized aspect due to its perceived or default suspect from the African traditional setup. However, little attention has been put on the influence of gender and attitude towards the performance of Physic in Kenya's Public secondary schools. Therefore, this study sought to investigate the influence of attitudinal factors and student gender on performance of physics subject in Kenya Certificate of Secondary Education (KCSE).

B. PURPOSE OF THE PAPER

The aim of this paper was to investigate the influence of student's characteristics on performance of physics in Kenya certificate of secondary education in selected public secondary schools, Laikipia County, Kenya.

C. OBJECTIVES OF THE PAPER

The Objectives of the study were:

- ✓ To establish the influence of student's attitude towards Physics on the performance of Physics in KCSE in Laikipia County
- ✓ To establish the influence of student gender on the performance of Physics in KCSE in Laikipia county.

D. RESEARCH QUESTIONS

The research was guided by the following questions;

- ✓ What is the influence of student's attitude towards Physics on the performance of Physics in KCSE in Laikipia County?
- ✓ What is the influence of student gender on the performance of Physics in KCSE in Laikipai County?

E. SIGNIFICANCE OF THE STUDY

The study will be of great benefit to the public secondary schools in Kenya as the case study for the report. The study will help such public secondary school to understand the main challenges that affect the development and performance of the Physics as the subject. The government, students and teachers and the policy makers in education.

II. LITERATURE REVIEW

A. STUDENT'S ATTITUDE ON THE PERFORMANCE OF PHYSICS IN KCSE

A review of the literature reveals that many science educators have recognized that student's view about science course is different from scientific ones. Craker (2006) suggested that prior knowledge has a great effect on student's knowledge of scientific concepts. Festingel's cognitive theory states that individuals seek some degree of consonance between their feeling (attitudes) and action. George (2010) agreed with the assertion that attitude is comprised of two component parts which are affective in dealing with mental process. The kind of attitude builds up by student's influence their learning abilities in a particular subject. Bajah (2015) explained that the position and negative attitudes of student's themselves have been suggested as a contributory factor to misconceptions. George (2011) further explained that inadequacies of furniture fitting and equipment in the classrooms and laboratories where teaching and learning of science subjects took place might contribute to misconceptions and alternative conceptions. Physics is considered as the most problematic area within the realm of science, and it traditionally attracts fewer students than chemistry and biology (Rivard and Straw, 2012).

Physics is perceived as a difficult course for student from secondary school to university and also for adults in graduate education. It is well known that both high school and college students find Physics difficult. The measurement of student's attitudes towards Physics should take into account their attitude towards learning environment (Crawley and Black, 2012). Research has made us known that the attitude towards science change with exposure to science, but the direction of change may be related to the quality of that exposure, the learning environment and teaching method. (Craker, 2006). If students have negative attitudes towards science, they also do not like Physics courses and Physics teachers. Based on this premise, numerous studies have been conducted to determine the factors that affect the student's attitudes in science. From these studies, some basic factors can be listed, including:

teaching –learning approaches, the type of science courses taken, methods of studying, intelligence, gender, motivation, science teachers and their attitudes, student’s attitudes to science courses, self adequacy, cognitive style of student’s, career interest, socio economic levels, influence of parents, and so on (Dieck, 2011).

There has been a long tradition of research on the measurement and classification of individual differences in spatial abilities. The spatial concepts in Physics and the timing of spatial development brought two questions to my mind. Essentially, spatial ability is the ability to visualize objects in three dimensions and manipulate them in your mind. Because there are quite a few instances in Physics where we are required to visualize objects in three dimensions and because of some of the literature available, I believe there may be some connection between the course and spatial ability.

Fortunately, recent research has found that spatial experience such as action video games (Feng, Spence, & Pratt, 2007) and formal spatial coursework (Sorby, 2009) can robustly improve spatial skills. However, most prior research has failed to investigate how long these effects last and how spatial training can improve outcomes for students majoring in STEM fields (Uttal et al., under review). Although previous studies of spatial abilities have not made strong claims that abilities at different scales of space are either completely overlapping (Unitary model) or completely dissociated (Total Dissociation model), most studies emphasize either the commonalities or the dissociations between these abilities. Learning Physics can often be difficult because many learners already have misconceptions about how the physical world works. White (2013) argued that one of the problems with Physics education is the top-down approach in which abstract formulas are taught first, which student’s later have trouble applying to every-day phenomenon.

B. INFLUENCE OF STUDENT GENDER ON THE PERFORMANCE OF PHYSICS IN KCSE

Physics is a discipline that has been plagued by many problems such as declining popularity and low enrolment especially in institutions of higher learning, poor academic performance in both external and internal examination and gender differences noticed in such performances. Gender roles affect familiarity with academic content, career aspirations, attitude towards subjects, teacher’s expectation and preferred approaches and these in turn affect academic performance (Equal opportunities commission, 2011). Studies have revealed that in Sciences and Mathematics, male student’s performed significantly better than female (Adeosun, 2008). Equally, some studies have found significant difference in academic in performance in Science and Mathematics between Male and female (Hazari, Sadler and Tai, 2008). However, Hazari et al (2008) argued that if females are well prepared, feel confident and do well in introductory Physics, they may be inclined to study Physics further. Submitted that the primary objective of introductory Physics instruction should be to facilitate a transformation in the student’s mode of thinking from the initial common sense knowledge state to the final Newtonian knowledge state of a Physicist. So, the

controversy could therefore be said to continue as to which of the gender have a better academic performance in Physics. The attrition of female studying Physics after high school is a growing concern to the Science Education community (Hazari, Sadler and Tai, 2008).

Physics is very interesting and one of the best sciences in the world. There is no gain saying about the fact that Physics occupies a very sensitive position in physical science and related discipline. This informs several efforts geared toward studying Physics at higher secondary level of education. Hence, it is one of the science subjects one must pass so as to qualify to offer some science courses at tertiary level of education. It is however, very disheartening and heartbreaking that despite the key role and much emphasis, being laid on Physics, student’s at higher secondary school level of education are still performing woefully in this subject has being an issue of great concern to stake holders in education, most especially those in the field of science.

Physics, as a field of science, provides information which student’s may use to explain daily-life phenomena related to objects around them. The concept of interest is an affective description of this influence of student’s and objects. The degree of the strength of this relationship also may represent levels of student interest in Physics. In addition, student’s’ prior experiences with objects in daily life may play important role in stimulating student’s’ interest in Physics and the Physics lesson concepts of Physics are considered to be difficult for students to learn (De Lozano & Cardenas, 2002). Even though students bring their ideas to the Physics classroom, they have difficulty connecting it to the concepts taught in the lesson. Student’s’ interest plays an important role in the accommodation of concepts (Palmer, 2005). On the other hand, recent research shows that there is a considerable decrease in student’s’ interest in Physics and Physics by grade level (Hoffman, 2002).

Many science educators attribute a great importance to the affective domain (Sjoberg, 2012). Shulman & Tamir (2013) have argued that the affective outcomes of science instruction are at least as important as their cognitive counterparts. The affective domain is characterized by a variety of constructs such as attitudes, preferences and interests. The definition of these constructs by different researchers varies and consequently may be confusing. As reported extensively in literature, student’s’ originally positive attitude towards science subject’s changes markedly in the upper grades, especially in chemistry and Physics (Graber, 2013). Simpson et al. (2014) have published an extensive review about student’s’ attitudes towards different science subjects. Generally, a negative attitude towards a subject leads to a lack of interest and, when the subjects can be selected as in senior high school, to avoiding the subject or course.

Over the last decade, student’s’ beliefs about Physics and learning Physics has become an active area of research within the Physics education research community. Findings from the early studies showed that student’s’ beliefs typically degrade – that is become more novice-like – over the course of most introductory Physics classes. More recently, studies have started looking at correlations between student’s’ beliefs and other measures, such as content learning or choice of major. In this paper, we begin to examine the influence of student’s’

beliefs and their self-reported interest in Physics, and their respective changes over a semester. For many years educators have examined and characterized student interest in Physics. Early work examined the relation between student interest and future career prospects, retention, and student beliefs. In a survey of student's, Briggs found that their positive interest in Physics was associated more strongly with future pursuits in Physics, whereas negative interest was attributed to factors of course implementation. Educational psychologists have also conducted extensive research in the general area of student interest and motivation.

The lack of interest in Physics, though, is reported to be a major problem in the most Western countries (OECD, 2008). Reports offer recommendations, such as a change of curriculum to fit the needs of all students', an assessment of practical activities and a consideration of the multidisciplinary character of research with links to society and other subject areas. On the other hand, while trying to make science interesting, there is a danger that "it merely becomes entertaining and that at best they remember an amusing trick, but forget or never learn the science it was supposed to illustrate" (Fensham, 2008).

C. THEORETICAL FRAMEWORK

This study has considered functionist theory to support this investigation in understanding student's' attitude towards Physics and provide a basis for helping them improve their performance and thus help them realize their best potentials. Katz, (2004) proposed a functionalist theory of attitudes. He takes the view that attitudes are determined by the functions they serve for us. People hold given attitudes because these attitudes help them achieve their basic goals. Katz distinguishes four types of psychological functions that attitudes meet that are; instrumental, Knowledge, value expressive and Ego-defensive. Attitudes provide meaning (knowledge) for life.

The knowledge function refers to our need for a world which is consistent and relatively stable. This allows us to predict what is likely to happen, and so gives us a sense of control. Attitudes can help us organize and structure our experience. Knowing a person's attitude helps us predict their behavior. For example, knowing that a student is interested in Physics learning will try performing better in the subject. Value-expressive; and Ego-defensive function that refers to holding attitudes that protect our self-esteem or that justify actions that make us feel guilty. Applied to this study, this theory explains that it is not so much changing the perception of Physics students to like and perform better in Physics but to understand that Physics is an important subject if they need to put their heart in Physics related careers. Most of them do not change their perception on the subject but rather understand the purpose of Physics in life and improve on their motivation. Physics student's need to engage in Physics learning for a future reward that is instrumental add some degree of order, clarity, and stability in our personal frame of reference that is knowledge and reinforce self-image that is value expressive.

D. THE CONCEPTUAL FRAMEWORK

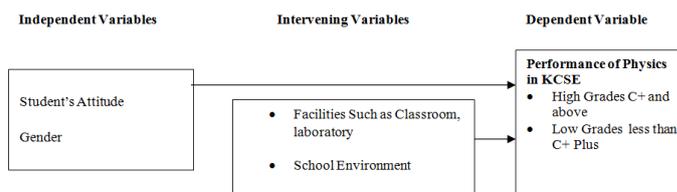


Figure 1: Conceptual Framework

a. STUDENTS ATTITUDE

The measurement of student's attitudes towards Physics in many instances has taken into account their attitude towards learning environment. If students have negative attitudes towards science, they also do not like Physics courses and Physics teachers. Based on this premise, numerous studies have been conducted to determine the factors that affect the student's' attitudes in science. In this study, the analysis sought to understand the influence of career prospects, past performance of Physics, students' formed opinions about their teachers, role models on students, influencing their attitudes towards Physics which may affect their grade in Physics exams.

b. GENDER

Gender roles affect familiarity with academic content, career aspirations, attitude towards subjects, teacher's expectation and preferred approaches and these in turn affect academic performance (Equal opportunities commission, 2011). Studies have revealed that in Sciences and Mathematics, male student's performed significantly better than female (Adeosun, 2008). Much as this is true, the literature did not indicate the influence of attitudinal factors and student gender on performance of physics. This study therefore sought to deepen the analysis on gender to determine influence of student gender as may be seen in societal stereotype, role model that is male for boy's students and female for girl's students and whether Physics students are boys or girls, influencing their attitudes towards Physics and adversely influence their performance in Physics exams.

III. METHODOLOGY

A. STUDY DESIGN

The study adopted ex post facto research design. The research design was best fit to analyze the influence of attitudinal factors and student gender on performance of physics subject in Kenya Certificate of Secondary Education (KCSE) in Public schools in Laikipia County. An ex post facto research design is a method in which groups with qualities that already exist are compared on some dependent variable (Mugenda and Mugenda, 2003).

B. TARGET POPULATION

The study targeted the public secondary school in Laikipia County. There are 67 secondary schools in Laikipia County. Out of the 67 public secondary schools, there are only 57 mixed public secondary schools. The study targeted the Physics teacher training the form four student's in each selected school and the immediate KCSE graduates who had done Physics as a selected subject in their KCSE. From the total number of selected mixed public secondary schools, there were 513 students who had graduated having done Physics in KCSE. Target population as defined by Kothari (2005) is a universal set of the study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result.

C. SAMPLING DESIGN

The research used purposive sampling design to select the sample size. Purposive sampling (also known as judgment, selective or subjective sampling) is a sampling technique in which researcher relies on his or her own judgment when choosing members of population to participate in the study. Purposive sampling is a non-probability sampling method and it occurs when "elements selected for the sample are chosen by the judgment of the researcher. Researchers often believe that they can obtain a representative sample by using a sound judgment, which will result in saving time and money. The study therefore purposively selected public secondary schools that had student taking Physics in their final National exams. All the 57 school were taking Physics and therefore the sample size was 57 public mixed secondary school taking Physics subject. This meant one questionnaire per school and was filled by the Physics teacher in such school. The study further managed to sample 62 former students of the selected schools who had sat for their KCSE and did Physics as part of their selected subjects in KCSE.

D. DATA COLLECTION INSTRUMENTS AND PROCEDURES

The data collection started by getting an introduction letter from the university, then a permit letter from the national council of science and technology and innovation (NACOSTI). The study further acquired authorization from the relevant public secondary schools in Laikipai County to whom the study was based. The study data collection was done using questionnaires and interview schedule. The questionnaires were meant for the Physics teachers in selected public secondary schools and the interview schedule was meant for former students who had done Physics in their KCSE in the previous years. The researcher used the research assistance to help in data collection due to the huge geographical expensiveness of Laikipia County.

Questionnaires were used as the major data collection instrument. A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents (Leung, 2001). The reason for using the questionnaire as data collection instrument is because it assists in the collection of information

from the respondents without affecting their schedules in their jobs and answers the questions at their own free time.

The study developed an interview schedule for the student's who did the KCSE in the previous year and specifically those who had sat for Physics subject as one of their selected subjects of specialization. The interview schedule comprised of open ended questions testing the student's attitude towards Physics and their gender perspective towards Physics and the performance of Physics in Kenyan Certificate of Secondary education (KCSE). The interviews were conducted one on one. The study tried to investigate the perception of the student's views regarding their teacher's attitude towards Physics and performance of Physics.

E. RELIABILITY AND VALIDITY OF DATA

The validity of an instrument was measured by its repeated reviews by experts and field tests. To validate the instruments, the researcher checked whether they were ambiguous, confusing and poorly prepared items. The instruments were tested to ascertain their validity and suitability in collecting the required data. The study used a pilot study to test the reliability and validity of the instruments. The study used 5 public secondary schools and 5 former students to test the instruments. The population used to test the instruments and their findings were not included in the final findings of this study. A research instrument is said to be valid if it measures what it is supposed to measure (Kombo & Tromp, 2006).

F. DATA ANALYSIS

After the fieldwork, before analysis, all questionnaires were adequately checked for reliability and verification. Editing, coding and tabulation were carried out. The data was then analyzed using qualitative and quantitative techniques. Qualitative method involved content analysis and evaluation of text material. Quantitative method involved the use of diagrams such as tables and charts. According to Kothari (2005), data analysis procedure includes the process of packaging the collected information putting in order and structuring its main components in a way that the findings can be easily and effectively communicated.

G. ETHICAL ISSUES

The researcher produced an introductory letter from the college which acted as proof to the respondents that the research was meant for education purposes. This is because some of the respondents feared that the information given could be used against them. The researcher personally ensured that the information given is kept confidential as prior relayed to the respondents. Researcher also ensured that they understand that the research was only meant for education purposes

IV. FINDINGS

A. RESPONDENTS' BIO DATA

Respondents	Male	Female	Highest percentage
Form 4 Physics Teacher	34	8	81
Former Physics Student's	32	24	57
Total	66	32	67

Source: Researcher, 2017

Table 4.1: Gender

The table 4.1 above indicates the gender disparity between male and female in the past KCSE classes in the sampled schools and more so the Physics teachers teaching Physics across the sampled schools. The analysis found that 34 out of 42 Physics teachers were male which is 81% while 8 out of 42 teachers which is 19% are female. The study further found that 57% of the Physics students were male while 43% were female. The analysis therefore can conclude that there is high inclination of male student's towards likeness of Physics than female students. This is in line with studies by Bello (2002) who indicated that the poor enrolment in Physics is no gender exception it cut across both male and female but it was important to establish that there is high number of male than female who enroll for Physics and more male take Physics as a subject to train in their career than female.

B. STUDENT'S ATTITUDE TOWARDS PHYSICS

The analysis sought to understand the attitude of the student's toward Physics. The analysis was as below

Respondents	Frequency	Percentage
Positive	16	38
Negative	26	62
Total	42	100

Source: Researcher, 2017

Table 4.3: Student's Attitude towards Physics

Table 4.3 above analyzed the student attitude towards Physics, the analysis found that 38% of the student's had positive attitude towards Physics while 62% had a negative attitude towards Physics. The study therefore seems to agree with the study by Bajah (2015) who explained that the position and negative attitudes of student's themselves have been suggested as a contributory factor to misconceptions. The study further agrees with (Craker, 2006) that if student's have negative attitudes towards science; they also do not like Physics courses and Physics teachers' hence poor performance.

The study further found that the study agreed with Bajah (2015) on the facts that the kind of attitude builds up by student's influence their learning abilities in a particular subject. Further the position and negative attitudes of student's themselves have been suggested as a contributory factor to misconceptions. However, the study found that the attitude does not stay the same; it changes in the course of time. After all, these new experiences, knowledge and skills should change the beliefs and attitudes of the individual regarding the difficulty of Physics by gaining problem solving skills. Problem-solving also involves a student's willingness to

accept challenges. Accepting a challenge in this context means that the student is willing to find appropriate methods to solve a problem. Normah and Salleh (2006) discovered that student's who can successfully solve a problem possess good reading skills, have the ability to compare and contrast various cases, can identify important aspects of a problem, can estimate and create analogies and attempt trying various strategies.

The analysis found that there are many factors that contribute to student attitude. From the analysis, the attitude of the student has a big impact to the performance of Physics. The analysis found that student attitude towards Physics, is the main key and reason why Physics is poorly performed in schools. The findings on these results agrees with (Sedlacek, 2004) that attitude, affects learning in science and in particular Physics. In addition, Shunk and Hanson (2015) suggest that the attitude of student's is likely to play a significant Role in any satisfactory explanation of variable level of academic performance shown by student's in their science subjects. Therefore developing student's' positive attitudes towards science should be the most important purpose of science teaching.

C. STUDENT GENDER ON THE PERFORMANCE OF PHYSICS

The study analyses sought to understand the influence of gender on the performance of Physics subject. The findings are as below;

Respondents	Frequency	Percentage
Yes	12	29
No	30	71
Total	42	100

Table 4.4: Student Gender on the performance of Physics Subject

The study on student gender in relation to performance of Physics, as analyzed on table 4.5 indicates that majority of the respondents do not believe there is influence of gender on the performance of Physics. The study found that 70% of the respondents rejected that there could be influence of gender on the performance of physic while 29% agree there is a influence of gender on the performance of Physics. The findings of this study disagrees with findings by (Adeosun, 2008) that Gender roles affect familiarity with academic content, career aspirations, attitude towards subjects, teachers expectation and preferred approaches and these in turn affect academic performance. Studies have revealed that in Sciences and Mathematics, male student's performed significantly better than female. Equally, some studies have found significant difference in academic in performance in Science and Mathematics between Male and female.

Respondents	Frequency	Percentage
Very High	8	19
High	9	21
Fair	12	29
Low	7	17
Very Low	6	14
Total	42	100

Table 4.5: Rate of Influence of student gender on the performance of Physics

The analysis on the rate of Influence of student gender on the performance of Physics subject indicated that 19% believed that gender effects on Physics performance is very high, 21% indicated the relationship is high, 29% v felt that the relationship is fair, while 17% indicted its low. There is a 14% of respondents who felt that the influence of gender on the performance of Physics is very low. From the analysis, it's clear that the influence of gender on the performance of Physics is fair. This indicates that both genders might have similar challenges with Physics and not one gender only. This finding relates with White (2013 that from the result it was revealed that there is no significant correlation between male and female performance in Physics. This implies that performance of any of the gender can in no way affect the performance of the other. It means one could not predict the performance of female students from male students or vice versa; they are independent of one another. This confirms the findings by Ahmed (2000) that, there is low participation of female in Sciences, Technology and Vocational education because these areas are exclusively meant for men. This result is not surprising due to female attitude to things of life apart from academic. For instance, female spend a lot of time in dressings, make-up and plaiting of hair. They waste precious time meant for studies on this trivial matters.

The results also established that there is perceived effects of gender on performance of Physics. The analysis in the above table shows that gender has big impact in the women performance of Physics but at the same time very critical to be analyzed. The biggest part is that gender perception towards science has been highlighted more than it is. The study findings agreed with Mari (2005) that Men typically outperform women on science achievement tests, even among student's with similar math and science course backgrounds. This gender gap in performance is small in early grades and becomes more pronounced through high school and college. One response to this gap has been to alter the classroom environment to encourage the interactive engagement of all student's. Recent studies at both Harvard and the University of Colorado have examined the effects of such methods of instruction on the gender gap in large calculus-based introductory Physics courses.

D. STUDENT'S RESPONSES

Year	Frequency	Percentage
2015	32	57
2014	18	32
2013	6	11
Total	56	100

Source: Researcher, 2017

Table 4.6: Student's Year of form four and KCSE Completion

The study further sought to understand the number of student who respondents. The analysis found that 57% of the student interview did their KCSE in 2015, 32% did their Physics KCSE paper in 2014 and 11% did their Physics paper in KCSE of year 2013. The numbers show a spread of Physics student in different year to help get authentic information about the topic understudy.

Scores	Frequency	Percentage
Grade A to A-	2	4
Grade B+ to B-	8	14
Grade C+ to C-	10	18
Grade D+ to D-	16	28
Grade E	18	32
Grade Y	2	4
Total	56	100

Source: Researcher, 2017

Table 4.7: Student's Physics Score in their KCSE Results

The analysis above shows the scores in Physics paper in KCSE for the student's interviewed. The analysis found that only 4% had scored an A in Physics, 14% had scored grade B+ to B- while 18% had scored between C+ to C-. The analysis further found that 28% of the student had score D+ to D- and another 32% scored an E. there were 4% still who score a Y indicating either exam cheating or malpractice during the examination. This implies a low performance in Physics across the years. To analyze this further the study sought to understand the student's attitude towards Physics and performance of the student due to such attitude from teachers. The analysis would help determine the performance of Physics and its relatedness to the student attitude.

The attitude test on students as shown on table 4.10 indicates that there is high influence of student attitude on the performance of Physics as a subject. The analysis found that most students' had positive attitude but they have challenges performing the best. The study found that 72% of student's always looked forward to my Physics lesson, 64% Given a chance I would have dropped Physics, 30% often got to revise with good performers in Physics in my class, 30% got to practice in the Physics lab before the exams, 50% regularly created time for Physics discussion in our class, 75% regularly asked questions when didn't get to understand Physics lesson, 75% found Physics very Boring while 69% felt that Physics was a very hard subject and 61% regretted choosing Physics. The results demonstrate that knowledge and skills related to solving Physics problems are essential to ensure a positive attitude toward Physics. This result agrees with Tooke and Lindstrom's (2008) opinion that students who have a positive attitude towards and beliefs about Physics will succeed at a higher level. Charles et al. (2007) are also of the opinion that student's' accomplishment in problem-solving depends on their method knowledge, attitude and self-confidence about their problem solving skills.

The results further sought to understand the student opinion on teacher attitude from the student point of view. The analysis found that 66% felt that teacher always looked forward to teaching a Physics lesson, 50% said that Teacher spend some extra time with us in Physics lab, 78%v felt that teacher enjoyed teaching Physics, 62% indicated that teacher assisted student's to solve Physics problems on their request, 34% felt that teacher always looked forward to improving grades in Physics, 56% felt that Student's participated well in my Physics lesson and 40 indicated that their Teacher would prefer another science subject to Physics.

The analysis further found from 65% of respondents that teacher planed effectively for Physics lessons, 89% indicated that Teacher regularly tested student's to check their understanding while 51% indicated that teacher encourage

students to form Physics discussion groups with my guidance. The analysis found from 82% that teacher formed a good rapport with my Physics student's, 74% that teacher needed to consult a book while explaining a concept in a Physics lesson and 40% indicated that teacher regularly rewarded Physics student's. Achievements in Physics Bames' study (2007) indicates that teachers get better at teaching during the first few years, level off, and then probably decline somewhat. Thus, teacher's age and experience in teaching affect how s/he teaches and therefore also student's' attitudes toward the course and student's' achievements in the course.

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSION

The study concluded that there is great need to enhance student motivation and improve their attitudes. The study concludes that attitude should not be ever used as excuses for not performing well in Physics. The analysis concluded that more should be done to enhance student attitude though through encouragement, showing good example and indicating better teaching methods that enhance their knowledge thus improving their understanding and eventually an uplifted attitude towards Physics. The study concluded that perceptions about difficulty of the subject should not be allowed to ruin the otherwise possible good performers in Physics rather should be used to enhance growth of the positive attitude towards better performance.

The analyses of our study also show that there is a significant difference in attitudes toward Physics between male and female students. Male student's have more positive attitudes toward Physics than female student's. The study showed that females constituted the majority of the low expectancy and successful gender in Physics. The study however concluded that with positive support and encouragement student who are ladies can perform better and reach their goals more equally like men in their pursuit for careers in Physics and relative mathematical fields.

B. RECOMMENDATIONS OF THE STUDY

The study recommends the following; the study recommends that schools should bring mentors to encourage and uplift the student attitude towards physics. These mentors should have passed their Physics papers and in the careers that relate to physics to offer proper examples on the importance of physics and hence improve both student attitude and performance in Physics. That both gender should be encouraged and be given equal opportunities to pursue Physics. This should be done by ensuring that students of both genders are given opportunities to pursue careers in physics without prejudice or discrimination. That teachers should be trained on the easier ways of designing their training methodology. This will help them get proper and encouraging results from students' performances hence increased individual motivation towards training physics. Physics teachers should avoid using any negative remarks against Physics student and toward the subject itself.

C. SUGGESTION FOR FURTHER STUDIES

This study was not conclusive but tried to cover a major segment on the influence of student attitudes, gender and teacher's attitude on Physics and performance of Physics. Nevertheless, more should be investigated to determine the effects of spatial abilities, inborn characters and intellectual quotient relationship with performance of Physics among student in secondary schools and specifically in their KCSE.

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