EFFECT OF UTILIZATION OF PHYSICAL RESOURCES ON PERFORMANCE OF STUDENTS IN THE KENYA CERTIFICATE OF SECONDARY EDUCATION IN PUBLIC SECONDARY SCHOOLS IN MARANI SUB-COUNTY, KENYA

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A Thesis Submitted in Partial Fulfillment of the Requirement for the Award of the Degree of Master of Education Administration in the Department of Education, School of Humanities and Social Sciences of Africa Nazarene University

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DECLARATION

I declare that, this thesis the described research are my original work and has not been presented for in any other university for academic work

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This thesis has was conducted under our supervision as and is submitted with our approval as University supervisors

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DEDICATION

I would like to dedicate this thesis to my husband Lawrence Siro, sons Federesto Mayaka, and Ignatius Bravin and, my daughter Marylinah Moraa. I also dedicate my work to my mother Sarah Mmbone for prayers accorded whenever I travelled.

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ABSTRACT

The excellent performance of students in school is determined by various factors, which includes human resources and physical facilities among other things. This study sought to establish the effect of physical resources on student's academic performance in Kenya Certificate of Secondary School Education in public secondary schools in Marani sub-county, Kenya. Performance of students is measured through the administration of examinations. The Kenya Certificate of Secondary education exam is conducted every fourth year of students' secondary education. In the year 2017, Marani sub-county had a mean score of 2.53 (D) in KCSE, which as per the Ministry of Education classification is regarded as a poor grade. The purpose of this study therefore, was to investigate the effect of physical resources on students' KCSE performance in public secondary schools in Marani sub-county. The study was guided by the following objectives; to examine the effect of available physical resources on KCSE performance, to establish the effect of schools' utilization of the said resources on KCSE performance and, to establish the difference in performance between schools that have and utilize physical resources and those that do not have adequate physical resources. The study was anchored in the System Resource Theory by Yutchman and Seashores (1967). The target population was comprised of 357 respondents (6 CSO's, and 32 head teachers and 319 teachers of 32 secondary schools in Marani Sub-County. The study used a descriptive survey design. Stratified, simple random sampling techniques were used to select the study sample. However, the census method was used to select the number of principals. The sample comprised; 3 CSO's, 141 teachers from the mixed day secondary schools, 17 from girls' boarding schools and 18 from boys' boarding secondary schools and 11 from mixed boarding. Primary data was collected through questionnaires and document analysis. Data analysis was done using descriptive statistics and inferential statistics with the aid of computer program, SPSS version 21. The findings of the study established that the availability of resources in the county was quite low (< 50%). In addition to the inadequate physical resources, the utilization of the available resources was equally low (< 50%). The lack of physical resources and their subsequent low utilization had a consequent negative impact on the performance of students in KSCE, in Marani Sub-county. The study concluded that there is a low availability and utilization of physical resources in Marani Sub-county which has a negative implication on the KCSE performance of students. Therefore, the study recommends that the stakeholders could be mobilized for funding, and that there should be an integration of ICT in teaching and learning. Further, the findings of the study may be used by the government to inform on the budgetary allocation for the education infrastructure support program. The study could be used for policy formulation by the ministry of education.

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OPERATIONAL DEFINITION OF TERMS

Academic performance	The KCSE mean grade of a school
Adequacy	Refers to the mobilization of sufficient resources to support a designed level in terms of both quality and quantity of instructional processes
Availability	Presence or absence of educational resources
Educational resources	Physical and material inputs in teaching
Physical facilities	Classrooms, libraries, laboratories, workshops and ICT infrastructure
Utilization	The use of available physical resources

LIST OF ABBREVIATIONS AND ACRONYMS

BOM	Board of Management
CDF	Constituency Development Fund
CBE	Curriculum Based Establishment
FPE	Free Primary Education
FSE	Free Secondary Education
ICT	Information and Communication Technology
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
NACOSTI	National Commission of Science, Technology, and Innovation
SPSS	Statistical Package for Social Sciences

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CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

This chapter presents the background of the study, problem statement and purpose of the study. It also highlights research objectives, research questions, hypotheses, significance of the study, limitations, delimitations, theoretical and conceptual frame work.

1.2 Background of the Study

The academic performance of students is majorly affected by environmental, social, economic and personal factors. The environmental factors are comprised of teaching and learning resources, physical infrastructure and the capacity of the teachers responsible for delivering the educational content to the students (Singh & Kumar, 2017). The number of facilities that are available at a school determine the quality of education that is offered by the institution and in turn, it affects the performance of the students in examinations. Further, Murillo and Roman (2011) established that the students' academic performance is attributed to the availability of facilities such as laboratories, sports facilities and libraries.

World Bank (2018) established that the quality of an education system is dependent on the availability of certain key inputs which include; physical infrastructure, teachers and curricular. Societies and governments around the worlds should therefore strive to ensure that they improve their education systems by providing enough funding for key infrastructure in order to ensure that every child has an equal opportunity during the acquisition of the skills and knowledge that they require to lead productive and healthy lives.

In Philippines, a study by Limon (2016) established that among the various factors that exist and operate within the teaching and learning process, adequacy of physical faculties is one of the most crucial factors that directly affects the educational outcomes of students because it aids the process of reinforcing skills and knowledge. The insufficiency of school facilities negatively impacts the achievement and performance of students and as a result, school administrators should be concerned with the policies and procedures that are focused on the provision of facilities and proper utilization or management of the available facilities.

The availability and subsequent utilization of physical resources is vital to the excellence of students in school. The significance of physical resources in the success of secondary curriculum cannot therefore be over emphasized. According to Jimo (2009), behavioral change by learners in all academic fields requires the use of physical resources in teaching. With a variety of learning facilities, learning and teaching becomes both a pleasant and interactive process.

Physical resources form part of the external environment to learners which has been found to be associated with the quality of academic grades. Asiabaka (2008) argued that the acquisition of knowledge by students from their teachers requires more than the intellectual discourse between these two parties (the teacher and the student), in the four walls of a classroom. For learning to thrive, there has to be a process of interaction, discovery and exploration of the intellectual content in a very conducive environment that is free from distractions. The education sector therefore has to do more than just deploying resources but develop and create learning facilities that enhance an external and internal environment in schools, which is suitable for that interaction between students and teachers.

In Nigeria, the national policy on education establishes the country's education goals. According to these goals, learning has to be both oral and practical for students to acquire the appropriate skills and the kind of competence that is requisite for an individual's survival in the contemporary world (Rosylene, 2012). It is therefore not possible to over emphasize the importance of physical resources in the achievement of these educational goals. In the investigation into 'the influence of physical resources to the attainment of educational goals in Nigeria, Rosylyne (2012) concludes that; in the absence of the necessary facilities, teachers cannot effectively translate the curriculum into actual learning experiences especially in practical disciplines such as science and technology to bolster quality of academic grades. The cultivation of a healthy mind is only possible in a healthy environment.

In Kenya, the cost sharing policy led to disparities in the availability of physical resources in secondary schools because of the poverty levels among households and the dwindling economy (KIPPRA, 2003). This is supported by World Bank (2010) in a study on the provision of libraries in secondary education in Sub-Saharan Africa which revealed that libraries were not only inadequate but unevenly distributed among rural and urban schools. However, the government of Kenya has introduced programmes geared towards acquisition of educational resources, thus enhancing accessibility to quality education among all households.

The introduction of Free Primary Education (FPE) in 2003 and Free Secondary Education (FSE) in 2008, has increased the Gross Enrolment Rate (GER) of students from 38% in 2007 to 42.5% in 2008 (ROK, 2008) hence complicating the availability of physical resources matrix in public schools. The government noted in its first annual progress report on implementation of Vision 2030 that lack of adequate infrastructure at all levels of education undermines efforts to access the equity to education and hence

making it difficult to address the existing disparities. The challenges of overstretched facilities due to the increasing enrolment have been found to have a negative effect on academic performance due to overcrowding, which hampers effective teaching and learning (Government of Kenya, 2005). There is therefore, a modest relationship between the education resources and the learning process that takes place in institutions.

Physical resources are comprised of facilities such as classrooms, dormitories, dining halls, playing fields, toilets, urinal pits, computer labs, schools halls, laboratories, offices and libraries among others. However, despite the fact that the availability of these resources is crucial to the learning process, their quality and effective utilization is equally important (OECD, 2013).

Most schools especially in the rural, arid and semi-arid areas are in dire need of physical resources such as classrooms, toilets, desks and libraries (Bosibori, Ngao, Rop & Wesonga, 2015). Majority of the public schools in these areas have been registering dwindling results in national examinations due to inadequate resources. The National Policy on Education (2012) posts that the cost of education is a shared responsibility among the stakeholders. The government has its share while parents and other stakeholders also have a role to play. But it is the sole responsibility of the state to mobilize the stakeholders to ensure there are adequate physical resources in schools. Akiri (2013) conducted a study in Ndaragwa District to investigate the influence of teaching and learning resources on academic performance of students. The study found that schools that had adequate resources registered quality grades in national examinations while those with inadequate resources experienced poor performance. Based on this background, the current study sought to assess the availability and

utilization of physical resources and their effects on students' academic performance in Marani Sub-County, Kenya.

1.3 Statement of the Problem

The excellent performance of students in schools is determined by various factors, which includes human resources and physical facilities among other things. According to Marani Sub-County KCSE analysis report for 2014-2017, public secondary schools in the Sub-County had a mean score of 2.53 out of the possible 12, with 71.3% of the candidates scoring grade D plus and below which as per the Ministry of Education classification is regarded as a poor grade. There is little information to explain this trend. This study therefore sought to assess the effect of the availability and utilization of physical resources on students' KCSE performance in public secondary schools in Marani sub-county, Kisii County.

1.4 Purpose of the Study

The purpose of the study was to find out the effect of availability and utilization of physical resources on students' KCSE performance in public secondary schools in Marani sub-county, Kisii County, Kenya.

1.5 Study Objectives

The study was guided by the following objectives;

i) To examine the effect of the availability of physical facilities on KCSE performance among students in public secondary schools in Marani Sub-county, Kisii county.
ii) To establish the effect of school utilization of physical facilities on KCSE performance in public secondary schools in Marani sub-county.

iii) To establish the difference in performance between schools that have and utilize physical resources and those that do not have adequate physical resources.

1.6 Study Hypothesis

H_{O1}: There is no predictive relationship between the availability of physical facilities and the KCSE performance of public secondary schools in Marani, Sub-county.

H_{O2}: There is no predictive relationship between the utilization of physical facilities and the KCSE performance of public secondary schools in Marani, Sub-county.

H_{O3}: There is no significant difference in the KCSE performance between schools that have and utilize physical resources and those that do not have adequate physical resources.

1.7 Significance of the Study

According to (Oso & Onen, 2005), significance of the study refers to the relevance of the research in terms of the practical use or the academic contributions that the findings of the study may have to the area of research. This study should have a significant input in the optimization of performance of students in public secondary schools. The study may provide information on effective utilization of scarce resources, the need to adhere to policies on establishment and maintenance of physical resources in public schools. It may also assist policy makers at the Ministry of Education to develop policy framework on disbursement of funds to improve infrastructure and enhance the availability and the accessibility of the physical resources by students and teachers in public secondary schools.

Thus, the findings of the study may be used by the government to inform on the budgetary allocation for the education infrastructure support program, particularly in

terms of which resources or facilities to be optimized, or the schools that need upgrading in Marani sub-county. The findings of this study could as well be significant to any parties interested in the optimization of the quality of education in Kenya or for further research in topics related to the impact of educational resources on performance of students in examinations.

1.8 Scope of the Study

Scope of the study refers to the geographical boundaries of the research. It is the area within which the investigation was done (Marylin & Goes, 2013). The study was conducted in Marani Sub County, Kisii County Kenya. It borders Rachuonyo South Sub County to the West, Kitutu Central Sub County to the south and Manga Sub County to the East. The research was concerned with public secondary schools within the area.

1.9 Delimitation of the Study

Delimitations of the study are the variables of interest in the theoretical perspective that was adopted by the researcher (Marylin & Goes, 2013). According to Mutai (2001), they are the information boundaries that are within the control of the research but may affect the generalizability of the study.

The performance of students in Kenya Certificate of Schools Education is affected by various factors which could not be captured within one study. The researcher therefore opted to focus on the effect of the availability and utilization of physical resources in the performance of students in the Kenya Certificate of Secondary Education (KCSE) in public secondary schools in Marani sub-county, Kisii County.

Types of physical facilities utilized by schools all over the world are numerous. This study could not cover the entire spectrum, but instead focused on libraries, computer labs, agriculture rooms, home science rooms, dormitories, toilets, water storage

facilities, games stores, school halls, science labs, computer labs, guidance and counseling rooms, teachers' accommodation, agriculture rooms, homes science rooms, playing fields, gymnasiums, health facilities, laundry facilities, chapels/mosques and classrooms as the main physical resources necessary for an optimum learning experience in secondary schools.

The study therefore, did not delve into material and human resources or the impact of Information and Communications technology in the performance of students in schools and, therefore perceived computer labs as physical facilities. This study sought to cover an analysis of the availability and utilization of physical resources and consequently established the effect of the availability and the level of utilization of these resources on the performance of students in KCSE examinations, by comparing the performance of schools that had a high availability of facilities against that of those schools that did not have adequate physical resources.

1.10 Limitations of the Study

Limitations of the study are those constraints that affect the outcome of the research but are not within the factors that the researcher can control. These may include constraints in the research design or methodology which force the researcher to make tradeoffs. They include; time constraints, schools of thought, geographical area and finances (Marylin & Goes, 2013).

Given that the area of the research was expansive, there were time and financial constraints as the surveys had to be conducted in all 32 schools in Marani Sub-County. Further, the research relied on the discretion of the respondents on the extent of utilization of the physical resources. This is because some respondents may have had

some bias in favor of their schools as a low level of utilization would indicate poor management of the resources.

1.11 Assumptions of the study

Assumptions are beliefs that cannot be proven by the researcher but are necessary during the conduction of the research. They are therefore realistic expectations that act as the basis for implementing the research and are believed to be true and not within the control of the researcher (Simon & Goes, 2011). The study assumed that all responses submitted by the respondents were true and not biased in favor of their respective schools. The study therefore assumed that the respondents were honest and factual. Secondly, the study assumed that the performance of students in the examinations was a product of internal factors rather than external factors such as the social-economic conditions. Thirdly, the study assumed that the respondents are aware of the role of physical resources in education and lastly, the school principals have the necessary knowledge on the policies of availability and utilization of physical resources in schools.

1.12 Theoretical Framework

The study adopted System Resource Theory by Yutchman and Seashores (1967). The theory asserts that organizational objectives can only be achieved when efforts are made to acquire, distribute and effectively utilize scarce resources. The theorists argued that organizations such as schools transform inputs such as human, physical and material resources to generate desired outputs. A school just like an industry processes given inputs to get desired outputs (Oni, 1995). Students get admitted in schools and then interact with teaching and learning resources and the output is learning outcomes. If physical and material resources in a school are adequate and are utilized effectively, quality learning outcomes are realized. All over the world academic performance is

used as a bench mark for an effective education. The success or failure of students communicates how resources have been utilized. Academic success is an indicator of availability, adequacy and effective utilization of educational resources. On the other hand, academic failure is a pointer to inadequate educational resources to effectively implement curriculum goals, teacher and student factors notwithstanding.

1.13 Conceptual Framework

The independent variables were the availability of physical resources, and utilization of the physical resources which are likely to influence KCSE performance (dependent variable) as shown in Figure 1.

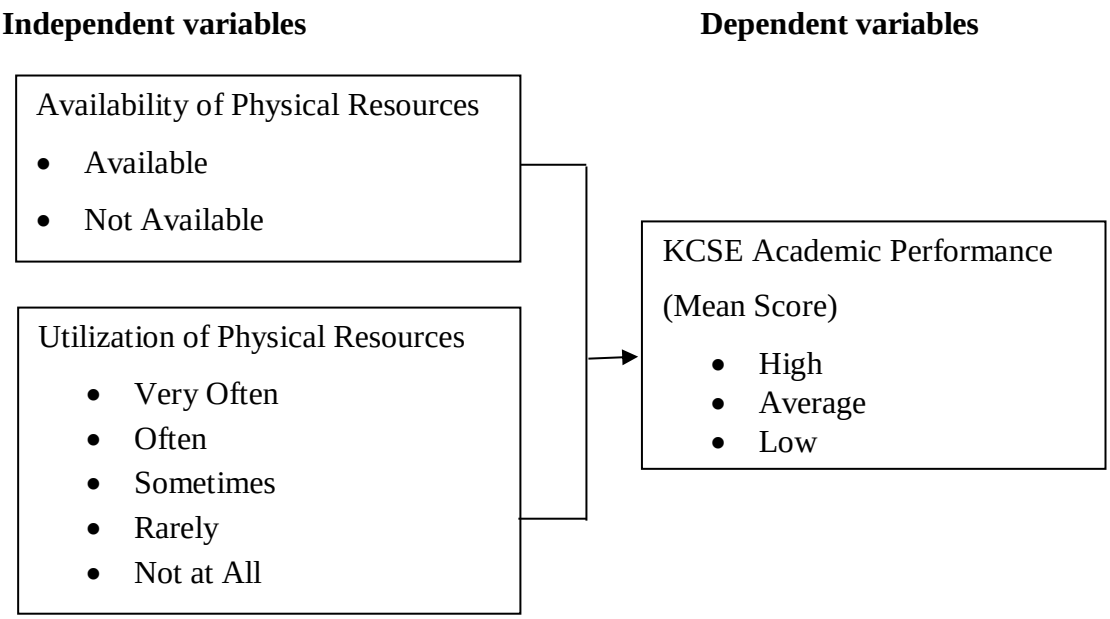


Figure 1: Conceptual framework

Figure 1 was developed from the literature review and the theoretical framework. It illustrates the availability and utilization of resources and their effect on students' academic performance in national examinations. The independent variables are the availability of physical resources, and utilization of the physical resources which are

likely to influence examination (KCSE) performance (dependent variable). The physical resources commonly used in schools include; computer labs, classrooms, dormitories, dining halls, offices, laboratories, library, agriculture rooms, home science rooms, play grounds, stores, toilets/latrines recreational facilities and water storage facilities.

Availability of the above resources ensures that the learners can work independently and with ease, assignments can also be issued and completed in good time, enriched learning environment, adequate syllabus coverage and consequently improved academic results. Further, the physical facilities help in creating a conducive learning environment while others directly affect curriculum implementation. A school that is well endowed with physical facilities is likely to realize better educational outcomes than one that is deprived of these facilities. From the figure 1, it is conceptualized that the independent variables: availability of physical resources and utilization of the educational resources have an effect on the KCSE performance of schools in Marani Sub-County.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed relevant literature to the research topic. Information was drawn from primary and secondary publications accessed in print and electronic media libraries and via the internet. The reviewed literature focused on the effect of availability of physical facilities on performance among students, the effect of the utilization of physical facilities on performance among students, the difference in performance between different types of schools and finally, the summary of the literature review and gap identification.

2.2 The Effect of Availability of Physical Resources on the Performance of Students

The academic achievement of students in school is majorly affected by resources provided within the school environment. In Canada, a study conducted by (Wei, Clifton & Roberts, 2011) considers human and physical resources amongst the most important resources that shape the educational experience, and which ultimately determine the academic achievement of students. The study notes that the Canadian government increased its national expenditure per student by almost 30% from the year 1998 to 2005. Similarly, the American government also increased its national expenditure per student with over 15% in the same period. These substantial increases in the two governments' expenditure on education was based on the argument that school resources have a strong effect on the academic achievement of students.

The study sought to investigate how physical improvements on the quality of the physical resources affected the student's achievement in mathematics and reading, in

Canada but the findings of the research revealed that the academic press and physical resources did not have a significant effect. However, the study was conducted in a developed country where the availability of physical infrastructure is not an urgent concern. In Kenya, development lags behind urbanization and as a result, the conditions of learning are quite different as most students, especially in rural areas lack basic infrastructure such as classrooms and libraries (Bosibori, Ngao, Rop & Wesonga, 2015). The current study will therefore be concerned with the availability of the resources and its effect on the performance of students. Further, the study by (Wei, Clifton & Roberts, 2011) was only concerned with the student's academic achievement in mathematics and reading while the current study interrogated the general performance of students in all subjects.

In Nepal, a study conducted by Bijaya and Maharjan (2015) to investigate the effect of physical facilities on the learning outcomes of students established that due to the lack of physical facilities, the performance of students in community schools in Nepal was lower due to the lack of physical facilities. This was consistent with a report by the World Bank (2018) that sought to determine the impact of school infrastructure on learning. The study used a descriptive research design to collect cross sectional data concerning the status of the availability of physical facilities in institutional and community schools.

Multi stage sampling technique was used to collect data, in three stages i.e. according to development regions in the first stage, rural and urban areas in each development region in the second stage and finally, the respondents were categorized into institutional and community schools in the third stage. The findings of the research revealed that most community schools faced problems of lack of physical facilities and as a result most of the students kept migrating from community to institutional schools

within Nepal. However, the study did not compare the performance of students in the Institutional schools with that of their counterparts from the Nepalese community schools, a concern the current study will address as it seeks to investigate the effect of the availability of physical resources and subsequent difference in performance amongst public secondary schools.

In Philippines, a study by Limon (2016) on the impact of the adequacy and quality of facilities on the performance of students, especially in livelihood and technology education establishes that learning is a complex process that constantly evaluates the motivation of students and physical conditions of the school. Each of these variables are crucial in ensuring that the flow of the learning process remains uninterrupted and that physical facilities are an equal contributor to the performance of students and their level of motivation. The study noted that the performance of students improved in the first four years after the provision of new facilities hence suggesting that effective maintenance of the available facilities could maintain the quality of the school environment, leading to high levels of academic achievement by students. However, the study was only concerned with the impact that the provision of new physical resources had on the quality of the learning environment of students through the introduction of specialized learning spaces, learner support spaces and the quality of the exterior environment; concepts which are a bit too advanced in the context of the current study. Further, the study did not explore the availability of the various types of physical resources and their effect on learners in various subjects, a concern that the current study sought to establish.

Adeogun and Osifila (2008) established that physical resources include laboratories, libraries, classrooms and a host of other physical infrastructure. Akinsanya (2010), commenting on educational resources says that; they are important because the goal of

any school depends on adequate supply and utilization of resources as they enhance proper teaching and learning. In addition, Obi (2006) carried out a study in Nigeria on the influence of resource allocation on secondary schools. Results revealed a correlation coefficient (r) of 0.6 which was significant at 0.05 levels. Obi noted that resource allocation to schools significantly influence students' performance. The study concluded that learning resources are vital factors that make a system function and therefore they are important in students' performance. Mugure (2012) asserted that resources and methods of instruction affect the amount of learning that takes place. Therefore, effective learning demands that resources are made available. These studies (Akinsanya, 2010; Obi, 2006; Mugure, 2012) were however concerned with educational resources holistically while the current study only focused on physical resources.

In a study to examine how the availability of physical resources affects the level of motivation and consequent performance of students in senior secondary schools within South West Nigeria, Akomolafe and Adesua (2016) recommended that more funds ought to be allocated to improve the academic standards of public schools by making learning conducive for both teaching and learning. The study noted that the provision of physical infrastructure, especially in public schools had continued to dwindle over time, probably due to the increased enrolment rates which had caused the population of students in public schools to explode. It suggested that the reduction in academic excellence and low performance of public schools could be traced back to the lack of school infrastructure.

The study employed an ex-post facto research design to examine the cause and effect relationship between the availability of physical infrastructure and academic

performance of schools. The target population was comprised of six states in the South West Geo-political zone, out of which three states were purposely sampled to constitute the one thousand and fifty secondary schools as the research subjects. According to the findings of the study, more high quality physical resources should be made available to public secondary schools in order to improve the levels of student motivation.

The findings of the study established a significant relationship between the levels of the availability of physical resources and the levels of student motivation. This indicated that the inadequacy of such facilities could lead to the poor performance of students as a result of low levels of motivation. Akomolafe and Adesua (2016) identified classrooms, toilets, libraries, laboratories, school buildings, offices and even recreational facilities, as some of the most essential physical infrastructure that would motivate students towards learning, and optimize the quality of teaching by teachers in those schools. The study recommended that the Government of Nigeria, as the proprietor of public senior secondary schools ought to avail more physical facilities to these schools in order to alleviate the students' motivation. Further, the allocation of resources and funds ought to be prioritized for public secondary schools in order to improve the learning environment. The study however assumed that a high motivation levels in students translates to high academic performance as it did not interrogate the direct effect of availability to the performance of students. The current study investigates the relationship between the levels of availability of physical resources and the performance of students. Further, the learning conditions in Nigeria and the factors affecting the performance of students in Kenya may be different.

Neji, Amba, Ukwetang, Nja and Cecilia (2014) conducted a study to establish the adequacy of science laboratories in schools within Calabar, Nigeria and its effect on the

academic performance of students in Chemistry. The study highlighted that the National Science Board Commission of Nigeria had confirmed that most states were failing to provide students with the necessary facilities that are requisite for the academic excellence of students in the 21st century. In addition, the board noted that it was necessary to provide students with a strong foundation in the areas of science and mathematics and that students should be offered equal opportunities to grow their critical thinking and problem solving abilities. Stratified sampling was used to select 350 chemistry students from a target population of 2652 chemistry students in Calabar.

The findings of the study revealed that laboratory facilities in secondary schools were not adequate in the teaching of chemistry and this had led to the poor performance of students in the subject. The study only focused on science laboratories and the performance of students in chemistry while the current study sought to investigate a wider spectrum of resources and their effect in the performance of students in a holistic perspective. The results of this study are however a pointer to the resource supply challenges faced by public schools, especially in developing countries like Kenya. The study is therefore in order to provide empirical evidence on the current availability and utilization of physical resources. Olagunju and Abiona (2008) asserted that availability of physical resources in schools cannot be overemphasized since they are the core of quantitative education. To enhance the quality of education, schools must be adequately equipped with resources to facilitate effective teaching and learning. The researcher noted majority of the sampled public schools in Nigeria were not adequately equipped with physical resources.

Relatedly, Orodho and Bizimana (2014) conducted a study to assess the availability of learning resources in secondary schools in Huye District in Rwanda. The study used a

sample of 619 respondents consisting of school administrators, teachers and students. The results showed that the teaching and learning resources in the area of study were insufficient. In a study to determine the adequacy of resources provided by the Free Primary Education program, in Nyandarua County, Muthima and Mutinda (2015) noted that resource centers in the locale of the study were inadequate. The study also revealed that the distribution of resources under the FSE program was not uniform. The disparity in the distribution of resources was associated to the differences noted in academic performance across different schools. These studies however focused on instructional resources while the current study was concerned with the physical resources.

In Tanzania, Victorini, Wambiya and Mwenge (2016) examined the adequacy of educational resources and their influence on instructional strategies in secondary schools. The researchers established that there were inadequate resources in the schools that were involved in the study. Further, the study revealed that in most schools, there were no clear library facilities apart from shelves that were erected in the teachers' offices and stacked with a few books. Majority of the schools also lacked recreational facilities, which are an important component of the learner centered pedagogy. However, the study did not investigate the relationship between the adequacy of resources and the performance of students in examinations.

A similar study by Ilomo and Mlavi (2016) to investigate the effect that teaching facilities have on the performance of secondary schools in Tanga District, Tanzania revealed that the lack of physical facilities such as dormitories, libraries, staff houses and classrooms had led to the poor performance of community based secondary schools. This was consistent with a report by the Ministry of Education and Vocational Training in Tanzania which revealed that the insufficient infrastructure was one of the

major challenges that faced secondary school education in the country (Hamilton, Mahera, Mateng'e & Machumu, 2010). The study employed both qualitative and quantitative research design to collect data. The findings of the research confirmed that lack of dormitories had led to poor performance of students due to lateness and absenteeism as students had to walk long distances to and from school. Most students had also lost interest in learning sciences and other practical subjects due lack of or insufficient laboratories. However, the analysis of data had limitations as the researcher only used proportions from responses submitted by the respondents to draw conclusions rather than testing the hypothesis to establish the extent and significance of the predictive relationship between the availability of physical resources and the performance of students.

Bakari, Likoko and Ndinyo (2014) concluded that schools with adequate physical facilities had superior advantage and therefore performed well in examinations than those schools that had little and inadequate physical facilities. Majority of those schools with adequate facilities had posted a lower standard deviation in their KCSE performance in the period between the year 2006-2010 while those schools that had inadequate facilities has posted a higher standard deviation in their performance. In the study to determine the effect of physical facilities on the performance of public schools in Bungoma South, Kenya; in the Kenya Certificate of Secondary Schools Education, Bakari, et al. (2014) noted that the enrollment of students in public primary schools had increased due to the introduction of free primary education, while the number of physical facilities remained unchanged. Further, the average ratio of students to classrooms was at 50:1 against the recommended ratio of 40:1, making it difficult for teacher to teach effectively. The findings indicated that the adequacy of facilities had a powerful influence on the educational performance of the students. The study however,

assumed that physical resources were available but inadequate. In the current study, the researcher investigated the availability of the resources.

In a study to determine how school infrastructure influences the performance of students in public secondary schools in Kajiado county, Mokaya (2013) indicated that physical infrastructure play a critical role in enhancing the motivation of school staff, improving the presence and attendance of students in schools and improving the academic performance of schools, in general. She identified school infrastructure to include sanitation facilities, dormitories, laboratories, open fields and classrooms; which are some of the most essential infrastructure in public secondary schools. Mokaya (2013) elaborated that libraries provide the students with the opportunities to conduct their own research and personal studies, open fields provide a platform for the conduction of co-curriculum activities, which are equally important in boosting academic performance and that classrooms provide a platform that facilitates the day to day learning and teaching of the students. Further, the study suggested that school infrastructure is a very important component in the academic success of students.

The study used a descriptive research design and was constituted of a target population of 2400, students, 238 teachers and 30 principals from secondary schools from the then Mwingi Central District. Three sets of questionnaires were therefore employed for the students, teachers and principals. From the findings of her study, Mokaya (2013) confirmed that academic excellence was associated with the adequate sanitation and water facilities, adequate science laboratories, ample and adequate spacing in the libraries and well-spaced and adequate classrooms. Evidently, the study sought to establish the adequacy of the available physical resources while the current study

sought to establish the availability of the resources and its effect in the performance of students.

2.3 Effect of Utilization of Physical Resources on the Performance of Students

In New Jersey, Athanasios, Noulas and Ketkar (2010) conducted a study to establish the efficiency of the utilization of physical resources in public schools. The study was premised on the fact that the academic performance of students in public secondary schools had been declining for over two decades at the time of the study. This had a perceived implication on the quality of labour and the overall productivity of the nation. The study further noted that there was a variation in the efficiency of utilization of resources amongst schools in different districts in the states, hence the need to investigate the factors that contributed to the variability. Resources were defined as inputs required to facilitate learning in school such as; laboratories, libraries, classrooms, books and other instructional materials.

In the study, Athanasios, Noulas and Ketkar (2010) demystified the difference between the effectiveness and efficiency of a school in the utilization of its resources. Efficiency was defined as the ability of a school to achieve the highest possible test scores with the available resources whereas effectiveness was defined as the ability of a school to produce test scores that were within certain acceptable levels. Therefore, a school with high test scores is not necessarily efficient because the high scores may be a product of a high availability of resources. The study therefore sought to investigate the efficiency of the public schools and to determine the influence of socio-economic factors on the efficiency levels.

From the findings of the study, the average efficiency rates of schools in New Jersey varied from 0.3666 to 1, which the average rate of inefficiency of 19%. Further, some

of the differences in efficiency amongst schools could be explained by the levels of poverty and crime rate in that, poverty levels and crime rate had a negative relationship with the efficiency of schools in the utilization of resources. The current study is however concerned with the relationship between the levels of utilization of physical resources and the performance rather than the efficiency of the utilization of resources. In addition, the current study is only concerned with physical resources, rather than educational resources as a whole.

In Nigeria, Akinsanya (2010) designed a study to investigate the impact of differential distribution and utilization of resources on the academic performance of schools in Ogun State. Multistage sampling was used to select 51 principals, 1020 students and 50 teachers from state owned schools in the local government areas. Questionnaires were used to collect the data, which was analyzed through multiple regression analysis. The study established that there was a significant difference in the distribution and utilization of human and material resources amongst state owned schools in the area of study. The study recommended a regular inspection of the provision and utilization of these resources by the government, as a corrective measure. The study was however not concerned with physical resources.

According to Yousuf and Ahmed (2005), it is common knowledge that abstract experiences by learners have a shorter retention period than those experiences that involve the active participation of the learner. This was in agreement with a study by Adeoye and Papoola (2011) which established that, learner need to be provided with access to the necessary sources of information in order for effective learning to take place. Learners therefore have to explore and interact with both intangible and tangible resources in order to enhance their performance in school. This was also supported by

Kadzera (2006) who asserted that learning is strengthened when there is enough reference materials such as textbooks, exercise books, teaching aids and classrooms; lack of which brings about the underutilization of the physical infrastructure that houses the material resources i.e. libraries, laboratories and classrooms. Further, the academic achievement illustrates per excellence the correct utilization of physical resources. Olagunju and Abiona (2008) also elucidate that utilization of resources stimulates and motivates students hence resulting in fruitful learning experiences.

When educational resources are available and utilized appropriately, cases of problem behaviors, drop outs and absenteeism among students are minimized which makes students remain motivated resulting to good academic performance (Owoeye & Yara, 2010). For example in teaching sciences, the use laboratories in doing experiments provide students with an opportunity for discovery learning. It creates curiosity and interest in using observation skills which improves the effectiveness of science instruction.

Adequacy and utilization of resources is very important because it has been linked to achievement of organizations' goals (Ibukun, Akinfolarin & Alimi, 2011). Resource utilization forms the basis for quality education. The adequacy and utilization of educational resources significantly influence academic performance. Since learning is a behavior that cannot be quantified, the effect of resource utilization on learning can only be inferred from the academic scores (Owoeye & Yara, 2010). Quality learning outcomes requires utilization of educational resources. Learning institutions strive to achieve their goals through resource mobilization and appropriate utilization. Physical resources can be available, adequate and in a status that meets the set standards but if they are not appropriately utilized, educational goals might not be achieved. These

studies (Yousuf & Ahmed, 2005; Adeoye & Papoola, 2011; Kadzera, 2006; Olagunju & Abiona, 2008; Owoeye & Yara, 2010; Ibukun, Akinfolarin & Alimi, 2011), however took a holistic approach in the investigation of the impact of educational resources while the current study singles out the effect of the utilization of physical resources.

Learning resources especially textbooks are the only source of information for teaching and learning particularly for students when they are doing assignments and their personal studies (Owoeye &Yara, 2010). However, with the advent of Information and Communication Technology (ICT) teachers and students can access information through the internet using mobile, computers and other electronic devices. ICT integration in teaching and learning has been found to enhance learning outcomes (Rastogi & Malhorta, 2013) and most of the studies conducted did not investigate the availability and utilization of this important resource in modern approach to learning. The current study therefore incorporate an investigation into the availability and utilization of ICT labs and its influence on academic performance of students.

In Kenya a number of studies have been conducted to assess the availability and utilization of physical resources on academic performance of students. Atieno (2014) studied the influence of teaching and learning resources on learning outcomes in Nairobi. The study sampled 6 principals, 18 class teachers and 240 students. The results revealed that the resources were available and were utilized in classroom instruction. However, the researcher noted that human resources were overstretched due to increase in enrolment of pupils. Kurgat (2014) found that national and county schools were adequately equipped with resources than sub county schools. The schools that had adequate resources were found to be performing better in economics than schools with inadequate resources. The study sought to investigate the availability and use of

instructional materials and was only concerned with the performance of students in economics.

Bakari, et al. (2014) suggested that there is indeed a problem of underutilization of physical facilities such as laboratories and libraries for the effective performance of students in the KCSE examinations. The aim of the study was to determine the impact of the management of physical resources on the performance of students in Bungoma South, Kenya. The study emphasized that regardless of the age, physical resources have a powerful influence on the achievement of students on a wide range of educational outcomes. Further, the layouts of the classrooms; in terms of furniture arrangements, space and the position of the students in relation to the chalk boards, windows and lighting had an impact on their performance in KCSE examinations. Bakari, et al. (2014) concluded that the low performance of students in examination was linked to the poor management of physical resources rather than the availability of the resources. The current study however, sought to determine the effect of utilization and was not concerned with the management of the facilities with regards to maintenance, furniture arrangement, lighting and the positioning of the students.

2.4 Difference in the Performance of Schools that have and Utilize Physical Resources and, those that do not have Adequate Physical Resources

In the United Kingdom, a study by Ndaji, Little and Coe (2016) established that there is a difference between the academic achievement of students from independent and state schools. It was established that the independent schools had higher average scores in all subjects as compared to students from state schools. However, the study highlighted that students from independent schools were from more privileged backgrounds as compared to their counterparts from state schools. The students of the

state schools were more deprived in terms of resources than students who came from privileged backgrounds. The study sought to investigate the effect of socio-economic factors in the differences in performance between state and independent schools. Therefore, the study did not consider internal factors such as the differences in the availability and utilization of physical resources within the two types of schools.

According to (Alimi, Ehinola & Alabi, 2012) there is no significant difference between the performances of students in private schools as compared to that of students in senior public secondary schools. The aim of the study was to examine the difference in the availability of facilities between private and public schools and its influence in their academic performance. The study revealed that there was a significant difference in the facilities that were available for schools in the public versus those that were available for schools in the private sector. The study employed a descriptive approach to research about the situation of facilities in private schools as compared to the situation of facilities in public schools. The population of the study was comprised of all teachers and principals in both public and private senior secondary schools in Ondo State, Nigeria. However, thirty six and fourteen public senior secondary and private senior secondary schools were purposively sampled, respectively; to take part in the research.

The findings of the study indicated that the private schools have a higher availability of facilities as compared to public schools. Alimi, Ehinola and Alabi (2012) argued that; if facilities have been found to have a cause and effect relationship with academic performance, then one would expect a better performance in private schools as they have a higher availability of facilities. Further, the proprietors of private schools seem to inject more funds towards the development of school infrastructure. The study revealed that, despite the obvious difference in terms of facilities between the two types

of schools, their consequent difference in performance in slight and as such, there is no significant difference in performance. However, the current study sought to investigate the difference in performance between boarding and day schools in the area of study.

According to a study by Olatunde and Owoeye (2011), the significance of instructional facilities to teaching and learning cannot be over-emphasized. This is because, physical facilities have been observed to be a very potent factor when it comes to success in education or academic excellence. School facilities are vital and strategic to the functioning of institutional organizations. They argued that; before a student can perform well in their higher education levels, they must be properly cushioned and groomed during the elementary days through the provision of facilities, upon which they could use them as a spring board to harvest their academic potential.

The aim of the study was to determine the difference in the allocation of schools facilities between rural and urban schools in Nigeria. The research revolved around their observation that some schools are favored in the allocation of facilities at the expense of others. The study employed the ex-post facto descriptive type of survey design due to the fact that the variables had already occurred and as such the researchers would not be able to manipulate them. The target population was final year students of both rural and urban schools in Ekiti state, Nigeria, comprising of a total of 50 secondary schools. A student and teacher questionnaire was the instrument of choice for collecting the data.

The findings of the study indicated that there was no significant difference between the availability of library facilities, laboratory facilities and their consequent performance in agricultural science between rural senior secondary schools and urban senior secondary schools. In terms of the availability of library facilities the mean score of

urban and rural schools showed no significant result at 1.350 and 1.100, respectively. At alpha level 0.05, the difference was found not to be significant.

In terms of the availability of laboratory facilities in the area covered by the study, there was no significant difference between rural and urban schools as well. A mean score of 1.300 was recorded for urban schools while the rural schools had a mean score of 1.100. This showed that there was a significant difference in the availability of laboratory facilities between rural and urban schools, at 48 degrees of freedom. Olatunde and Owoeye (2011) concluded that there was no significant difference in the availability of facilities for both rural and urban schools in Ekiti state, Nigeria. The study focused on the difference in performance between rural and urban schools while the current study sought to investigate the difference in performance between boarding and day schools in Marani, Sub-County.

According to Alabi and Oluwole (2012), the core business of schools and learning institutions at large is teaching and learning. It is therefore imperative that the main stakeholders of these processes i.e. the learners and teachers are properly accommodated in order to facilitate and optimize the process of teaching, and consequently, learning by the students; and this is the essence of school infrastructure. In a study to investigate school types, state of facilities in terms of availability and utilization and the resultant performance of such schools, in Ondo state, Nigeria. Alabi and Oluwole (2012) concluded that despite the clear and significant difference in terms of facilities available in public and private schools in Ondo state, there was no significant difference in academic performance between the two types of schools. This is an example of an analysis between schools that have adequate resources against those schools that do not have enough physical infrastructures. The aim of the study was

therefore to establish if public and private schools differ in terms of the available facilities and the consequent differences in terms of academic performance between the two types of schools.

The study employed a descriptive research design and questionnaires were used to collect data from the selected public and private schools with regards to the state of physical facilities. Thirty six and fourteen, public and private schools were purposely sampled out of the all the senior secondary schools in Ondo state, which constituted the target population. The findings of the research revealed that there was a significant difference in the facilities that were available for public and private schools with private schools recording a higher level of physical infrastructure. However, there was no significant difference with regards to the consequent performance, between the two types of schools in examinations. The current study sought to investigate the difference in performance between boarding and day schools, rather private and public schools in the area of study.

For an education system to be effective, the importance of physical infrastructure in facilitating the learning process cannot be repudiated. The attainment of educational goals and academic excellence is therefore highly dependent on the proper management of these physical resources over the course of their useful lifespan (Ibrahim, Umar & Igbaji, 2017). The study sought to examine the difference in the conditions of schools buildings between rural and urban schools and its impact on the achievement of students in secondary schools within Adamawa State, Nigeria. The findings of the study revealed that there was a significant difference between the conditions of schools buildings across the urban and rural schools within the area of study and, the different conditions of school buildings had an effect on the performance of students. The study

was however concerned with rural and urban schools while the current study sought to examine the difference in performance between rural boarding and day schools in the area of study.

According to Ibrahim et.al. (2017), despite the fact that the availability of infrastructure alone may not be a sufficient factor to enhance the academic achievement of students, it is quite obvious that those schools that were better equipped and had an adequate funding for and provision of plant and facilities experienced higher academic performance, a higher level of motivation and consequent learning as compared to those schools that either had insufficient or did not utilize the available facilities to their optimum potential. Ibrahim, et.al. (2017) asserts that there exists a strong positive relationship between the availability and utilization of instructional resources and the performance of students. Further, schools that were endowed with more resources performed better than their counterparts that were less endowed. According to the findings of the study however, there was no statistical significance in the relationship between the level of infrastructure and the level of performance of schools. Ibrahim, et.al., (2017) however explained that the negative correlation may have been yielded as a result of the diminutive sample size.

2.5 Summary of Literature review and Gap Identification

The importance of physical resources cannot be over emphasized in the teaching learning process because of their role in the achievement of educational objective and goals. Educational resources according to Adeogun and Osifila (2008) are categorized into four; that is human, material, physical and financial resources. From the reviewed literature, studies conducted to investigate the effect of the availability and utilization of educational resources in various areas of study established that there was a shortage

of educational resources and a subsequent low utilization which had contributed to the poor performance of students in examinations.

Most of the studies (Ibukun, Akinfolarin and Alimi, 2011; Orodho and Bizimana, 2014) however took a very holistic approach to the investigation of educational resources while the current study sought to focus on the relationship between physical resources on the performance of students. Further, studies that were conducted in the developed countries by Wei, Clifton and Roberts (2011) and Limon (2016) were concerned with the quality, management or the adequacy of the physical resources rather than their availability and subsequent utilization. Other studies (Wei, Clifton & Roberts, 2011; Neji, Amba, Ukwetang, Nja & Cecilia, 2014) were only concerned with the effect of the availability of physical resources on the performance of students in a specific subject whereas the current study sought to establish their effect on the performance of students in general.

In terms of the difference in performance between difference categories or types of schools, there is little research that clearly compares the availability and utilization of physical resources, and the difference in performance between the high performing rural public senior secondary schools and their rural counterparts. Most of the research (Ibrahim, et al., 2017; Alabi & Oluwole, 2012; Alimi, Ehinola & Alabi, 2012; Ndaji, Little & Coe, 2016), sought to either compare the difference between public secondary schools and private secondary schools or to investigate the difference in performance, availability and utilization of resources between urban and rural public secondary schools (Olatunde & Owoeye, 2011). This was based on the general perception that private and urban schools have a higher availability and utilization of resources and facilities as compared to their rural or public counterparts. The current study sought to close this gap by investigating the difference in availability and utilization of physical

resources and the subsequent difference in performance between public secondary schools in Marani Sub-county, Kenya.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter constitutes the research design that was used and the locale of the study. It also focuses on the target population, sample size and sampling techniques, piloting, research tools, data collection and analysis techniques, legal and ethical considerations.

3.2 Research Design

Creswell (2012) defines the research design as a scheme outline or plan that is used to generate answers to research problems. It constitutes the blue print for the correction of measurement and analysis of data (Kothari, 2008). The study used descriptive survey design. According to Gatara (2010), descriptive research design is suitable for the collection of data over an extensive area of study because it is relatively cheaper. The survey was cross-sectional in nature as data was collected from the target population at one point in time. The choice of survey technique was based on three major reasons. First, surveys provide a quick, efficient and accurate means of accessing information about the population. Second, a survey is appropriate where there is a lack of secondary data. In this case, secondary data for the availability, and use of physical resources in the schools in Marani Sub-county is scarce thus, conducting a survey to gain such information was necessary and third, the study sought to sample and describe events or opinions without manipulating variables for which a survey design is the best (Oso & Onen, 2005).

3.3 Location of the Study

This study was done in Marani Sub County, Kisii County Kenya. It borders Rachuonyo South Sub County to the West, Kitutu Central Sub County to the south and Manga Sub

County to the East. According to Kothari and Garg (2014) the ideal location for a study is the one that is easily accessible and directly related to the interests of the researcher. A location that is easily accessible allows the researcher to create immediate rapport with the respondents which improves both external and internal validity of results. Marani Sub County, Kisii County, Kenya has been consistently posting low mean scores in the years 2015, 2016 and 2017, with mean scores of 4.41, 4.94, 3.14 and 2.95, respectively; in the Kenya Certificate of Secondary Education (KNEC, 2018).

As a resident of the Sub-county, finding a solution to the problem of poor academic performance is an aspect that the researcher was deeply passionate about and as a way of securing the future for the young generations, by creating a conducive environment that would see local schools in Marani Sub county compete on an equal platform with other regions in Kenya. Studies have established that teacher motivation is associated with availability and adequacy of physical and material resources (Ibrahim, et al. 2017). The researcher was therefore compelled to investigate the state of physical infrastructure in public secondary schools in the location and its relationship with academic performance in the Kenya Certificate of Secondary Education.

3.4 Target Population

Target population can be defined as a complete set of individuals, cases/objects with some common observable characteristics of a particular nature distinct from other population (Kombo & Tromp, 2006). A population is a well-defined as a set of people, services, elements and events, group of things or households that are being investigated. It is an entire group or individual events or objects having common observable characteristics (Mugenda & Mugenda, 1999). The study targeted a population of all 32 public secondary schools in Marani Sub-county. The target population comprised 32

principals and 319 teachers from the 32 secondary schools, and 6 Curriculum Support Officers from the 6 zonal levels in Marani Sub-county. The distribution of teachers was based on the type of school, while the Curriculum Support Officers were categorized according to their zonal mandate, as shown in Table 3.1.

Table 3.1: Summary of the Target Population

Category	No. of Schools/Zones	Number of Respondents
Mixed public Day schools	26	265
Girls boarding schools	3	32
Boys Boarding schools	2	34
Mixed Boarding school	1	20
Zones	6	6
Total	32	357

Source: Sub-County Education Office (2018)

3.5 Sample Size Determination and Sampling Techniques

3.5.1 Sample Size Determination

A sample is a small proportion of the population that is selected for observation and analysis. By observing the characteristics of the sample one can make certain inferences about the characteristics from which it was drawn (Best & Khan, 2006). The sample size was computed as shown by the formula below:

$$n = \frac{N}{1 + Ne^2}$$

Where n is the sample size, N is the population, e is the level of precision (Yamane, 1967). The sample size was then calculated as follows:

$$n = \frac{357}{1 + 357(0.05)^2}$$

$$n = 188.64$$

The sample size is approximately 53% of the target population, which also meets the threshold recommendation by Mugenda and Mugenda (2003), that the sample size must be at least 30% of the target population. The sample is large enough for the purpose of reducing the biases in the findings (Babbie & Rubin, 2010). Mugenda and Mugenda (2003) observed that where time and resources allow, a researcher should take as big sample as possible. The dangers of a small sample were its inability to reproduce the salient characteristics of the target population to an acceptable level. The sample size of the respondents was distributed proportionately across the different categories of schools as shown in Table 3.2.

Table 3.2: Sample Size

Category	**Number of schools/Zones**	**Target Population**	**Sample size**	**Proportion %**
Mixed day public schools	26	265	141	53
Girls boarding schools	3	32	17	53
Boys boarding schools	2	34	18	53
Mixed Boarding Schools	1	20	11	53
Zones	6	6	3	53
Total	**38**	**351**	**190**	**53**

The sample size of the study comprised 190 respondents; 141 teachers from the mixed day secondary schools, 17 teachers from girls boarding schools, 18 teachers from boys boarding Secondary schools, and 11 from mixed boarding and 3 Curriculum Support Officers. The sample therefore included; 155 teachers, 32 principals and 3 CSOs. These numbers were based on proportionate allocation whereby, 53% of respondents was selected from each category. This is because the sample size (190) as calculated based on Slovin's formula (Yamane, 1967), was 53% of the study's target population.

3.5.2 Sampling Techniques

Saturated/census sampling technique was used to include all the 32 head teachers in the sample. This is because, head teachers were considered to be a crucial source of information by the researcher, as they are responsible for the administration of resources in school. Stratified random sampling technique was used to select a sample of teachers for each category of schools. The schools were grouped into categories because the study intended to compare the availability and utilization of resources across the categories.

Simple Random sampling was used to select a random representative sample for each school and this ensured that each teacher had an equal and independent chance of being selected (Oso & Onen, 2005), except for the head teachers who were prioritized over the other teachers. Simple random sampling was also used to select a sample of Curriculum Support Officers from each zone, in Marani Sub-county. Simple random sampling approach is known to eliminate bias thus enabling errors to be eliminated and to increase the external validity of the results (Kothari & Garg, 2014).

3.6 Data collection Instruments

Research instruments are a means by which primary data are collected (Mugenda & Mugenda, 2003). The tools that were used to collect data in this research were questionnaires and interview schedules. The questionnaires had open-ended and close-ended questions. Open-ended questions helped to gather in depth information while close-ended questions gave out structured responses.

The study used questionnaires to collect data from school principals and teachers, interview schedules to collect data from curriculum support officers and document analysis to collect data on the KCSE performance of students. The use of varied research instrument or source triangulation is the surest way of minimizing threats to internal and external validity (Atrichtes, Feldman, Posch, Somekh, 2008; Creswell, 2012). Besides they contend that triangulation gives more detailed and balanced picture of the situation. Kothari (2008) considers questionnaires as the heart of a survey operation. Use of questionnaires allows greater uniformity in the way questions are asked and hence ensuring comparability in the process.

3.6.1. Questionnaire

A structured questionnaire was used to collect data for this research (Appendix II). According to Saunders et al. (2012), a questionnaire contains questions and other types of items designed to seek appropriate information for data analysis. In addition, a questionnaire is also an essential instrument of data collection as it allows the collection of standardized data from a large amount of respondents, which is suitable for statistical analysis.

A questionnaire that had closed-ended items was administered to the sampled head teachers and teachers. Responses to each of the items was rated using a 5-point Likert

scale which was coded as follows: 1 = not at all, 2 = rarely, 3 = sometimes, 4 = often, 5= very often, in order to obtain their views on a set of given statements. The Likert scale was used because it is relatively easy to construct, it facilitates quantifications of the responses, and enables ranking of items thus tendencies can be identified and improves the response rate as the respondents are more likely to respond to all the statements in the instrument (Kothari & Garg, 2014).

The head teachers' and teachers' questionnaire was divided into three sections (refer to Appendix I). Section A aimed at collecting background information of the respondents, such as teaching experience, academic qualifications and the type of schools that they were stationed. Section B was set to collect information on the availability of physical resources and its effect on the performance of students in KCSE examinations. Section C sought to gather information regarding the utilization of physical resources and its effect on the performance of students in KCSE examinations.

3.6.2 Interview Schedule

Interview schedule was used to collect information from Curriculum Support Officers concerning the availability of physical resources and utilization of physical resources, and its effect on the performance of students in KCSE examination. The CSO's were also in a better position to provide information concerning the challenges facing the provision and utilization of these resources and also to suggest ways in which the government could address these challenges.

3.6.3 Document Analysis

Examination result sheets for each school were used to collect data concerning the KCSE performance of all schools in the area of study.

3.7 Piloting of the Research Instruments

Before the actual data collection, the researcher conducted a pilot study that was comprised of a sample of 10 teachers, from 5 public secondary schools in the neighboring Kitutu Central Sub County. The five schools were not included in the actual study. The main aim of the pilot study was to enhance validity and reliability of the research instrument (Creswell, 2012).The pilot study enabled the researcher to be familiar with the research and its administration procedure as well as identifying items that required modification.

3.7.1 Validity of the Instruments

Validity is the ability of the instruments being used to help the researcher draw meaningful and justifiable conclusions about a sample population from the data collected (Bryman, 2004; Creswell, 2012; Gay, Mills & Airasian, 2009). Research is only valid if it actually measures what it is supposed to measure and only if the findings are verifiable. Validity is the accuracy and meaningful inferences, which are based on the research results (Kothari, 2008). The researcher ensured that there are adequate items in the data collection tool and they are correlated to the conceptual frame, objectives and the title of the study. Variables and constructs in any research need to be validated. This study adopted both content and constructs validity. The researcher consulted with the supervisor for expert judgment to ensure that content validity was achieved. The language used in the tools was simple and clear to avoid confusing the respondents so as to attain construct validity.

Face validity was ascertained through expert judgment and peer review during the pilot study. The pre-test was used to enable the researcher to assess the clarity of the questionnaire so that items found to be superfluous and misunderstood were modified

to improve the quality of the research instrument, thereby increasing its strength and validity (Faux, 2010).

The content validity of the instrument measuring availability and utilization of physical resources was achieved while designing the survey instrument. This was carried out through extensive literature review followed by securing opinions from the experts in which evaluation by a group of experts and peers provided their comments on the relevance of each item on the instruments by indicating that the items were relevant.

3.7.2 Reliability of the Instruments

Reliability is a measure of a degree to which a research instrument yields consistent results or data after repeated trials (Kombo & Tromp, 2006). Reliability of the questionnaire items was determined by the test-retest method in which the same respondents in the pilot study were requested to provide information for the second time. The results from the pilot study was then be used to calculate the Pearson's product moment correlation coefficient and a coefficient of 0.89 was obtained. An instrument is acceptable and reliable when the coefficient of correlation is either equal or more than 0.7 (Fraenkel, Wallen & Hyun, 2012).

3.8 Data Processing and Analysis

Quantitative data was coded and then entered into statistical package for social sciences (SPSS version 21). Qualitative data was categorized using thematic analysis and then coded into SPSS program for analysis. Data was screened to check for missing values, outliers and test for assumptions. Percentages were used to determine the availability of physical resources. To determine the utilization of physical resources, the Multi-item Likert Scale data was analysed using weighted averages which applied for ranking purposes. To establish the effect of availability and utilization of resources on KCSE

performance, and whether there was a significant difference in KCSE performance between schools that had, and utilized physical resources and those that did not, a multiple regression analysis was done at 95% confidence level. The analyzed data was presented in tables.

3.9 Legal and Ethical Considerations

The researcher sought authorization letter from Nazarene University to conduct the research and then a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Once all the materials for data collection had been prepared, the researcher sought authorization conduct the study from the Marani sub-county education officer. The researcher booked appointments with the principals of the schools that were to be sampled for data collection.

The participation of the principals, teachers and Curriculum Support Officers in this study was done on free will. They were given a consent form to read and understand the purpose of the study, confidentiality of the information was provided and withdrawal from the study at any time if they so wished in order to make an informed decision to participate in the study by signing. All the sources of information used by the researcher in the study have also been acknowledged.

CHAPTER FOUR
DATA COLLECTION, RESULTS AND ANALYSIS

4.1. Introduction

This chapter presents the results of data that was collected in the study. The purpose of the research was to establish the effect of availability and utilization of physical resources in the KCSE performance of students in Marani Sub-county, Kisii County. The objectives of the research were; to examine the effect of available physical resources on KCSE performance, to establish the effect of schools' utilization of the said resources on KCSE performance and to establish the difference in performance between different types of schools and its relationship to availability and utilization of resources. The data was collected by issuing questionnaires to head teachers and teachers, and interviewing Curriculum Support Officers.

4.2. Response Rates

Questionnaires were issued to head teachers and teachers. Thirty two (32) questionnaires were issued to head teachers, 31 were returned (96.8 %) while one was incomplete (0.031%). One hundred and fifty five (155) questionnaires were issued to teachers, two were not returned (0.013%) while three (0.019%) were incomplete. The return rate for the teachers' questionnaires was therefore 98.7% (153), as shown in Table 4.1. These rates were considered adequate for data analysis since according to Best and Khan (2006) return rates of more than 60% are considered to be very good. The questionnaires were administered and collected on the same day and these minimized chances of loss and ensured high return rates.

Table 4.1: Response rates

Instrument category	Delivered	Returned	%
Head teacher questionnaires	32	31	96.8
Teacher questionnaires	155	153	98.7
Total	**187**	**184**	**98.4**

4.3. Demographic Characteristics

The researcher also found it necessary to establish the demographic information of respondents. The information sought included the teaching experience and professional qualification of the teachers. This information was important because it was used as the basis for some interpretations. However, the researcher did not collect the demographic information of the Curriculum Support Officers because they were not involved in the utilization of the physical resources.

4.3.1 Teaching Experience

The respondents' teaching experience was recorded in Table 4.2

Table 4.2: Teaching experience

Years of experience	Number of respondents	Percentage %
0 – 5 yrs.	17	9.24
6 – 10 yrs.	37	20.11
10 – 15 yrs.	73	39.67
16 – 20 yrs.	32	17.39
Over 20 yrs.	25	13.59
Total	**184**	**100.0**

As shown in table 4.2; 9.24% (17) had a teaching experience of 0 – 5 years, 20.11% (37) of the respondents had teaching experience between 6 – 10 years, 39.67% (73) of the respondents had teaching experience of 10–15 years, 17.39% (32) of the respondents had a teaching experience of 16 – 20 years and 13.59% (25) had a teaching experience of over 20 years. Majority of teachers had teaching experience between 10 – 15 years.

4.3.3 Academic Qualifications

The respondents were asked about their academic qulifications and their responses recorded in table 4.3.

Table 4.3: Academic Qualifications

Academic qualifications	Number of respondents	Percentage (%)
Masters	14	7.61
B.Ed	132	71.74
P.G.D.E	13	7.07
Diploma	25	13.57
Total	**184**	**100.0**

According to Table 4.2 a majority of teachers 71.74% (132) had B.Ed. qualifications. This implied that most teachers had the necessary knowledge and skills to utilize the available resources effectively. On the other hand, 7.48% (14) of the teachers had a Master degree, an indication that they were better placed to critique policies regarding the provision and utilization of physical resources. A few 13.38% (25) of the teachers had a Diploma while the rest 6.95% (13) had a P.G.D.E qualification. Therefore, all the respondents had the skills requisite in facilitating the acquisition of knowledge by students. Further, it implied that the respondents had the ability to respond to all questions that were raised in the questionnaires.

4.3.4 Type of School

The respondents were asked about the type of school they are teaching in and their response recorded in Figure 4.4

Table 4.4: Types of School

Type of School	Number of Schools	Percentage (%)
Mixed day	25	78.12
Girls boarding	4	12.5
Boys boarding	2	6.25
Mixed boarding	1	3.13
Total	**32**	**100.0**

From table 4.4, it was found that 78.12% (25) schools were mixed day, 12.5% (4) of the schools were girls' boarding, 6.25% (2) were boys boarding and 3.13% (1) were mixed boarding. There were fewer boarding schools (21.88%) than mixed day schools (78.12%). This implied that there were fewer physical facilities in terms of buildings to accommodate the boarding schools.

4.3.5 Categories of School

The respondents were asked about their categories of school they teach in and their responses recorded in Table 4.5

Table 4.5: Categories of School

Category of school	Number of schools	Percentage (%)
National	0	0.0
County	5	15.6
Sub-county	27	84.4
Total	**32**	**100.0**

It was established from Table 4.5 that 84.4% (27) of the schools in Marani Sub-County were Sub-County Schools, while 15.6% (5) were County Schools. There was no National School in the Sub-County. National and County schools are well equipped in terms of facilities compared to Sub-County Schools in terms of physical facilities and other resources. This is due to a higher capitation percentage by the government. Since most of the schools are Sub-county schools, their capitation is low an indication that the provision of physical resources is also equally low. This is likely to affect the performance unless other intervention measures like Constituency Development Fund (C.D.F) and other sponsorship comes in to assist.

4.4. Effect of the Availability of Physical Resources on KCSE Performance

4.4.1. Availability of Physical Resources

The first objective of the study was to determine if the availability of physical resources had affected the KCSE performance of students. Questionnaires were circulated to all the head teachers with a list of physical resources in order to establish the resources that were available in each school. The respondents (Head teachers and teachers) were asked if the following physical resources were available for teaching and learning and their responses recorded in Table 4.6.

Table 4.6: Availability of Physical Resources

Physical facility	Availability (No. of schools)	Availability (%)
Classrooms	32	100.0
Computer lab	6	19.0
Science labs	26	81.0
Library	4	12.5
Agriculture rooms	0	0.0
Home science rooms	1	3.1
Playing fields	32	100.0
Gymn	0	0.0
Toilet	32	100.0
Dining hall	16	50.0
School halls	11	34.4
Teachers Accommodation	12	37.5
Games stores	4	12.5
Water storage facilities	26	81.3
Health facilities	0	0.0
Canteens	6	18.8
Laundry facilities	0	0.0
Chapel/Mosque	0	0.0
Guidance and counseling rooms	3	9.4

Table 4.6 illustrates the availability of physical resources in public secondary schools in Marani Sub-county. There are a total of 32 public secondary schools. The second column of the table shows the number of schools that have the facility that is listed in the first column. The third column illustrates the proportion of schools in terms of percentage that have the facilities aligned to them in the first column of the table.

Facilities that were available in most of the schools include; classrooms (100%), playing fields (100%), toilets (100%) science labs (81%) and water storage facilities (81.3%). On the other hand, the least available facilities were home science rooms (1%), games stores (4%) guidance and counselling rooms (3%) and canteens. Agriculture rooms, gymns, health facilities, chapels/mosques, health facilities and laundry facilities were however not available in any of the schools in the area of study.

When asked to comment on the availability of physical resources, Curriculum Support Officers (CSO) felt that most of the schools in the area of research had very few physical facilities. Some of the most critical facilities such as laboratories, libraries and computer labs were the most unavailable and were mostly available in the sub-county schools. The CSO's also agreed that the low availability of these resources had disadvantaged students in the area as they could not compete on an equal platform with students from schools that had enough resources. Most Curriculum Support Officers noted that the biggest challenge in the provision of physical resources was inadequate funding. Most CSO's suggested that some of the ways in which provision could be improved included intervention from Constituency Development Fund and other sponsors, as some of the facilities, especially laboratories require huge amounts of capital to construct.

4.4.2. Effect of the Availability of Physical Resources on the Performance of Students.

The respondents (Head teachers and Teachers) were asked if the availability of the facilities affected their school's performance and their responses were recorded in Table 4.7.

Table 4.7: Effect of availability of physical resources on performance

Respondents	Agree		Disagree	
	No.	%	No.	%
Head teachers	21	67.7	10	32.3
Teachers	134	87.6	19	12.4
Curriculum Support Officers (CSO)	2	66.7	1	33.3
Total	159	83.7	31	16.3

Table 4.7 illustrates the opinion of the teachers on whether the availability of the physical resources had an effect on the performance of students. Most of the respondents (83.7%) were in agreement that performance of students could be explained by the level of availability of physical resources in their respective schools. Head teachers and teachers felt that the unavailability of some of the most critical facilities such as laboratories had affected the students' performance in practical subjects like the sciences, agriculture and home science. This corroborated the findings of the study by Mayama (2012) that the effective teaching of science subject requires the use of laboratories to carry out experiments. Further, libraries are one of the most important physical resource. Therefore, the unavailability of libraries had affected the performance of students, especially in the languages and humanities.

When asked to comment on the effect of the availability of physical resources on the performance of students, most of the Curriculum Support Officers (66.7%) were also of the opinion that the low availability of physical resources had negatively affected the performance of students in Marani sub-county. However, 33.3% of the Curriculum Support Officers (CSO) felt that some of the available facilities were not adequate and did not meet the standards prescribed by the ministry of education in terms of size and even those that met these requirement were overcrowded due to the growing population of students. Most of the physical resources like classrooms were also insufficient hence the available classes were overcrowded. This was consistent with the findings of Bakari et al., (2014) that the nature and quality of facilities also had a significant impact on the performance of students as they constitute the students' teaching and learning environment.

4.5 Effect of the Utilization of Physical Resources on the Performance of Students in KCSE Examinations.

4.5.1 Utilization of Physical Resources

The second objective of the study was to establish how often the students interacted with the physical resources and its effect in the performance of students in KCSE. The data collected was illustrated in table 4.8, as shown below.

Table 4.8: The level of utilization of physical resources

Facility	Not At All 1		Rarely 2		Sometimes 3		Often 4		Very Often 5	
	No.	%	No.	%	No.	%	No	%	No.	%
Classrooms	_	_	_	_	_	_	_	_	32.0	100.0
Computer lab	27.0	84.0	_	_	3.0	9.4	2.0	6.3	_	_
Science labs	11.0	34.0	2.0	6.3	4.0	12.5	10.0	31.0	5.0	16.0
Library	29.0	91.0	_	_	2.0	6.3	1.0	3.1	_	_
Agriculture rooms	32.0	100.0	_	_	_	_	_	_	_	_
Home science rooms	31.0	97.0	_	_	_	_	1.0	3.1	_	_
Playing fields	7.0	22.0	_	_	8.0	25.0	11.0	34.0	6.0	18.8
Gymn	32.0	100.0	_	_	_	_	_	_	_	
Toilet									32.0	100.0
Dining hall	20.0	63.0	_	_	1.0	3.1	6.0	19.0	5.0	16.0
School halls	22.0	69.0	1.0	3.1	2.0	6.3	4.0	13.0	3.0	9.4
Teachers' Quarters	23.0	72.0	1.0	3.1	2.0	6.3	2.0	6.3	4.0	13.0
Games stores	29.0	91.0	_	_	2.0	6.3	1.0	3.1		
Water storage facilities	7.0	22.0	_	_	_	_	5.0	16.0	20.0	63.0
Health facilities	32.0	100.0	_	_	_	_	_	_	_	_
Canteens	27.0	84.0	_	_	_	_	3.0	9.4	2.0	6.3
Laundry rooms	32.0	100.0	_	_	_	_	_	_	_	_
Chapel/ Mosque	32.0	100.0	_	_	_	_	_	_	_	_
G&C rooms	29.0	91.0	_	_	2.0	6.3	_	_	1.0	3.1

According to the findings of the survey, the level of utilization of the physical resources was illustrated in the table above. Depending on the frequency of utilization each

facility was assigned a numerical score using a Likert scale as follows; Very often: 5, Often: 4, Sometimes: 3, Rarely: 2 and Not at all: 1. It is important to note that those schools that did not have the respective physical facilities were classified together with those schools that did not utilize the available resources. In reference to table 4.7. The respondents (Head teachers and teachers) confirmed that 100% of the schools utilized their classrooms and toilets. Agriculture rooms, gymns, health facilities, laundry rooms and chapels/mosques were the least utilized facilities because all the respondents revealed that students never utilized them.

When asked to comment about the utilization of physical resources, Curriculum Support Officers revealed that most of the critical infrastructure such as laboratories, libraries, computer rooms and dining halls were not available and as a result, they could not be utilized by the student. One of the curriculum support officers commented:

> We do not have physical resources to utilize. Very few schools in this area have most of those facilities that you are asking about. I am sure, if you go to any school right now, you will not find laundry rooms, mosques, chapels, heath facilities and gymns. How do you expect us to utilize resources that we do not have.

The Curriculum Support Officers (CSO) added that the even the available physical resources were not usable because of lack of the necessary equipment. The CSO added that most schools had laboratories, but utilizing them for practical classes was low and this was attributed to lack of chemicals, specimens, models and apparatus. Most schools used the laboratory during mock examinations and national examinations for the form fours. Lower level classes rarely used the laboratories, meaning that students were not exposed early enough for practical lessons. Another CSO commented;

> The low level of utilization of the physical resources could be attributed to the lack of electricity, high cost of maintenance, unavailability of specialized equipment and lack of enough teachers handling the subject. As a result very few schools in the area utilized their physical resources. Further, computer labs lacked expert teachers who could guide the students and therefore the few available computer labs were not being utilized by the schools. In other schools, some of the buildings were very old. Therefore, the growing population of students could not fit in. For example, most schools used classrooms to conduct experiment because the available laboratories were too small to accommodate all student from each class (CSO 3).

According to the CSOs the most utilized facilities were classrooms, toilets and water tanks because they were readily available. One Curriculum Support Office noted that (CSO) every school in the area had toilets, but the hygiene of the toilets was not a priority to the school administrators. They emphasized that even the available facilities were not enough and that; instead of lobbying for other physical resources, the government should be concerned with the provision of resources or adding the quantity of the resources that were already available, in order to satisfy the needs of the growing student population.

4.5.2 Effect of the Utilization on the Performance of Students in KCSE

When asked about the effect of utilization of the physical resources on the performance of students, 91.4% of the respondents confirmed that low utilization of the resources had a negative effect on the performance of students in KCSE examinations. One of the Curriculum Support Officers also agreed that the low utilization of physical resources had a negative effect on the performance of students. On the other hand, 66.7% of the Curriculum Support Officers revealed that the available facilities were being well utilized but the problem was the insufficiency of these resources, as shown in table 4.9.

Table 4.9. Effect of the utilization of physical resources on performance

Respondents	Agree		Disagree	
	No.	%	No.	%
Head teachers	26	81.3	5	16.1
Teachers	144	94.1	9	5.9
Curriculum Support Officers (CSO)	1	33.3	2	66.7
Total	171	91.4	16	8.6

When asked about the challenges facing utilization, some CSO's revealed that most of the available facilities were in a poor condition as some of the buildings were old, small and lacked the necessary equipment. For instance, most schools used book stores instead of libraries and students could not fit in the small stores. They suggested that the problem could be solved by the provision of enough equipment and adequate facilities that met the standards prescribed by the Ministry of Education.

4.6 Difference in Performance between Schools that have and Utilize Physical Resources and, Schools that do not have Adequate Resources

The third objective of the study was to investigate the difference in performance across schools and its relationship to the availability and utilization of physical resources. Document analysis was done for the performance of schools in Marani Sub-county for the past four years. The data for availability and utilization of physical resources for each of the schools was obtained from the responses from the questionnaires submitted to the 32 head teachers. The data was then analyzed against the performance of each school in Marani Sub-county and presented in table 4.10.

Table 4.10. Analysis of performance, availability, utilization and type of school

Name of school	KCSE performance						A	U
	T	2014	2015	2016	2017	Mean		
Nyakeiri Boys	B	5.0600	4.8700	4.3080	4.1818	4.6050	63%	4
Itibo Girls	B	7.5000	8.2020	5.2770	4.0625	6.2604	58%	4
Eramba Mixed	D	8.4700	7.8650	5.1220	3.8545	6.3279	58%	3
Rioma Mixed	D	4.4020	4.7790	2.9410	3.8113	3.9833	53%	3
Kenyoro Mixed	B	6.3100	6.5190	4.5610	3.7797	5.2924	47%	4
Nyagesenda Mixed	D	6.0000	5.0440	3.8430	3.5577	4.6112	53%	2
Nyasore Mixed	D	4.7800	3.7830	3.3760	3.3488	3.8220	58%	3
Kiareni Mixed	D	4.9600	5.3640	4.1270	3.3220	4.4433	58%	2
Entanda Mixed	D	5.8200	6.0000	4.5880	3.2680	4.9190	53%	3
Nyakeyo C.O.G Mixed	D	3.8500	3.8400	2.6000	3.1579	3.3620	47%	2
Mesaria Mixed	D	3.4200	3.5530	2.3500	2.8667	3.0474	42%	2
Itibo Boys	D	5.8900	5.1490	3.3490	2.8649	4.3132	53%	4
St. Joram Asanyo	D	4.7400	5.3450	3.9590	2.8571	4.2253	42%	2
Nyagoto Mixed	D	N/A	4.3890	2.7200	2.8500	3.3197	42%	1
Nyankanda Mixed	D	3.7600	3.8330	2.7790	2.8333	3.3013	47%	3
St. Monica Marani Girls	B	5.2500	4.7370	3.4000	2.7750	4.0405	42%	2
St. Johns Metembe	D	4.3300	3.7000	2.6560	2.7273	3.3533	42%	2
Nyakoora Mixed	D	4.3400	4.0640	2.9550	2.7051	3.5160	37%	2
Engoto Mixed	D	3.7600	3.7200	2.4100	2.6164	3.1266	42%	1
Mosocho P.A.G Mixed	D	2.6900	3.1740	2.0330	2.5860	2.6208	32%	2
Nyansakia Mixed	D	4.6100	4.6000	2.6400	2.5483	3.5996	37%	2
Nyabworoba Mixed	D	3.5400	3.6580	2.4860	2.5385	3.0556	37%	3
Tambacha COG	D	4.4800	3.7410	3.3100	2.5357	3.5167	32%	3

Nyakome Friends	D	3.5000	3.8400	2.6000	2.4848	3.1062	32%	2
Nyagonyi Mixed	D	4.3500	3.9520	2.8500	2.4390	3.3978	42%	1
Gamba SDA	D	3.4030	3.6330	2.4390	2.4348	2.9775	37%	2
Geturi Mixed	D	3.7000	4.1300	2.6530	2.4190	3.2255	37%	1
Masakwe Mixed	D	2.5900	3.6250	2.3300	2.0555	2.6501	32%	2
Sensi Mixed	D	3.1000	3.2730	2.5560	2.0303	2.7398	32%	2
Manyansi Mixed	D	N/A	N/A	N/A	1.8571	1.8571	26%	1
Ikuruma Mixed	D	2.1700	N/A	N/A	1.5000	1.8350	21%	1
Nyota Marani Sec.	D	1.9400	1.8130	1.5500	1.4103	1.6783	21%	1

KEY: A = Availability of physical resources U = Utilization of physical resources

T = Type of school B = Boarding school D = Day school

N/A = The School did not sit for KCSE examinations in that year

Table 4.10 illustrates findings of the study from the surveys conducted and document analysis; for the performance of schools in Marani Sub-county. The schools were ranked in a descending order from the top school to the bottom school as per their mean scores in their 2017 KCSE examinations, which was the most recent examination at the time of the study. The column for the availability of resources represents the proportion of the list of physical resources in the issued questionnaires that were available in the different schools. The column for utilization represents the frequency of utilization of the available resources for each school.

This data was obtained from the questionnaires that were issues to the 32 principles from the 32 schools that constituted target population for the study. This is because, the principals were sampled through the saturated or census sampling technique. Therefore, every school had a representative respondent. The frequency of utilization of the physical resources was measured using a Likert scale that had a scale of 1 to 5 whereby the questionnaires were coded such that; Not at all = 1, rarely = 2, sometimes = 3, often =4 and very often = 5.

Table 4.10 shows that most of the schools that had a higher availability of physical resources performed better than those schools with a lower availability of physical

resources. For instance; Nyakeiri boys, which was the top secondary school in the 2017 KCSE examination (4.6050) also had the highest availability of physical resources (63%). On the other hand, Nyota Marani Secondary schools, which was ranked the lowest in the 2017 KCSE examinations also had the lowest availability of physical resources (21%). The availability of physical resources was calculated as a proportion of the resources available in the schools against those there were listed in the questionnaires submitted to head teachers. These findings were consistent with the responses by 83.7% of the respondents who felt that the availability of physical resources had an effect on the performance of students in KCSE examinations.

Likewise, the top schools in the 2017 KCSE examinations had a high utilization of the available resources while those that posted low performances in the examination had a low utilization of their resources. For example; Ikuruma Mixed Secondary school, which was ranked the second lowest in the 2017 examination (1.5000) had a low utilization of its physical resources (1). Itibo Girls secondary schools that was ranked second in the examination, had a high utilization of physical resources (4). The scores for the utilization of the resources were obtained from the responses given by head teachers, concerning the utilization of physical resources by their respective schools.

The data was further collapsed into the means of each variable in order to enhance the comparison between the availability and utilization of physical resources, and performance of boarding schools against day schools in table 4.11.

Table 4.11: Comparison between boarding and day schools.

Type of school	Performance		Availability		Utilization	
	Mean	SD	Mean	SD	Mean	SD
Boarding Schools	5.05	0.96	53%	0.10	3.50	1.00
Day Schools	3.43	0.97	41%	0.11	2.07	0.81

KEY: SD = Standard Deviation

In terms of the availability and utilization of physical resources, table 4.10 shows that boarding schools had a higher availability of physical resources (53%) than day schools (41%). Further, boarding schools had a higher utilization of physical resources (3.50) that day schools (2.07). In terms of performance, boarding schools had a higher mean (5.05) in the KCSE examination than day schools (3.43). Therefore, there was a clear difference in both the performance of students in the two types of schools, which could be attributed to the difference in the availability and utilization of physical resources. This was consistent with table 4.7 which indicates that 83.7% of the respondents agreed that the availability of physical resources had an effect in the performance of students. Similarly, table 4.9 reveals that 91.4% of the respondents agreed that the utilization of these resources also had an effect in the performance of students.

4.7. Hypothesis testing

Multiple regression was conducted in order to ascertain the predictive relationship in the model between the two independent variables (availability and utilization of physical resources) in this study, and the dependent variable (performance of schools in KCSE examinations; in Marani Sub-county). Each of the independent variables was hypothesized to be a predictor of the dependent variable and were therefore

subsequently stated in null form and tested at 95% confidence level. Table 4.12 illustrates the summary of the regression analysis.

Table 4.12. Multiple Regression Summary

Model	R	R^2	Adjusted R^2	Standard error of the estimate
1	0.858	0.737	0.719	0.58346

Predictors: (Constant), Availability of Physical facilities, Utilization of Physical facilities.

Dependent Variable: KCSE Performance

According to Table 4.10, the multiple regression correlation coefficient R, had a value of 0.858. In the interpretation of correlation coefficients, an R of +1 indicates that there is a strong positive correlation between a set of variables. When one variable experiences a positive change, then the other variable also experiences a positive change, and vice versa. If R is -1, then for any positive change in one variable, the other variable experiences a negative change. An R of 0 indicates that there is no relationship between the variables. The bigger the absolute value of R, then the greater the tendency of the variables to behave in a similar manner. In this case an R of 0.858 indicated a strong positive correlation between the independent (availability and utilization of physical resources) and the performance of students in KCSE examinations. Therefore, from the findings of the study, the greater the availability of resources the higher the level of utilization tends to be.

Further, the multiple regression revealed a coefficient of determination R^2 of 0.737 (73.7%). This indicated that 73.7% of the dependent variable (Performance in KCSE examinations could be explained by the dependent variable (availability of physical facilities and the utilization of the available facilities). In the interpretation of the coefficient of determination, if R^2 is equal to 1 or 100%, then the regression prediction

model fits perfectly with the collected data. It indicates that 100% of the change in the dependent variable could be explained by changes in the independent variables. If R^2 is equal to 0, there is no predictive relationship between the dependent and the independent variables. It means that there exists no cause and effect relationship between the dependent and the independent variables. The closer R^2 is to 1 or 100%, then the stronger the relationship or the more significant the cause and effect relationship is or the better the fit between the regression model and the collected data. As per the regression analysis R^2 was 0.737 and hence was close to 1, indicating a significant cause and effect relationship between the performance of schools in KCSE and the availability and utilization of physical resources.

Table 4.13 illustrates an output from analysis of variance (ANOVA). In the ANOVA table analysis, F represents a test to determine whether the regression model is a good fit for the data. It is meant to determine if the model represents an accurate predictive relationship between the dependent and the independent variables. The table therefore indicates that $F(2, 32) = 69.152$, $p < 0.05$, therefore the availability and utilization of physical resources statistically significantly predict the performance of students in the KCSE examinations. However, other factors that were not within the scope of the study may have accounted for the variance. The regression model was therefore a good fit of the collected data.

Table: 4.13: Analysis of Variance (ANOVA)

Model	**Sum of Squares**	**Df***	**Mean Square**	**F**	**Sig.**
1Regression	26.164	1	26.164	69.152	0.000
Residual	11.351	29	0.378		
Total	**37.515**	**30**			

Df* - Degrees of freedom

Table 4.14 reveals that the independent variables have a relative contribution to the KCSE performance of schools in Marani Sub-county. The positive values of the coefficients of the availability of physical facilities (0.066) and the utilization of the available resources (0.301) suggests that the KCSE performance of school in the area of study is determined by variations in the independent variables. As such therefore, performance of these schools in the KCSE examinations would improve if the level of availability and utilization of physical facilities was increased.

Table: 4.14: Summary of the Multiple Regression Model Coefficients

	Un-standardized Coefficients		**Standardized Coefficients**		
Model	**Beta**	**Std. Error**	**Beta**	**T**	**Sig.**
2. (Constant)	0.139	0.415		0.334	0.740
Availability	0.066	0.012	0.067	5.346	0.000
Utilization	0.301	0.144	0.260	2.084	0.046

Dependent Variable: KCSE Performance of schools, in Marani Sub-county

The regression model that captured the hypothesized relationship was as follows:

$$\boldsymbol{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon}$$

Where;

Y = KCSE Performance of public secondary schools in Marani Sub-county

X_1 = Availability of Physical Resources

X_2 = Utilization of the available Physical Facilities

ε = Level of error

Assuming that the level of error in the model is equal to zero and substituting the values of the un-standardized coefficients β, the equation becomes:

$$\boldsymbol{Y = 0.139 + 0.066X_1 + 0.301X_2}$$

The β is a coefficient that indicates the level of contribution of each variable to the model if all the other predictors are held constant. The coefficient β, therefore represents the relationship between the level of KCSE performance and each independent variable in the model. Therefore, if all other factors are held constant, an increase in the availability of physical facilities by 1 unit would translate to an increase in the level of KCSE performance by 0.066 units (β=0.066). Likewise, if the level of utilization of physical facilities increases by 1 units, then the level of performance is also bound to increase by 0.301 units (β=0.301).

The standardized β values indicate the standard deviation of the dependent variable resultant from one unit, standard deviation change in the independent variables. On that note, the figure 4.14 indicates that at 0.260, the utilization of physical resources was the most significant predictor of KCSE performance, as compared to the availability of the physical resources which was at 0.067.

In order to test the three hypotheses that were formulated, the *t* statistic was considered. The *t* statistic is formulated by dividing the coefficient β by the standard error of the regression model. The standard error measures the extent to which the coefficient β varies across the different cases. Therefore, if the coefficient is larger than it standard error, then it is considered to be different form zero.

$H0_1$: There is no predictive relationship between the availability of physical resources and the KCSE performance of public secondary schools in Marani, Sub-county.

According to Table 4.14 the unstandardized beta value for the availability of physical resources was significantly greater than zero ($\beta = 0.066$, $t = 5.346$, $p < 0.05$). The null hypothesis was therefore rejected because the availability of physical resources had a significant effect on the performance of students in the KCSE examinations. This indicated that schools that have a higher availability of physical resources posted a better performance in examinations.

$H0_2$: There is no predictive relationship between the utilization of physical resources and the KCSE performance of public secondary schools in Marani, Sub-county.

According to Table 4.14 the unstandardized beta value for the utilization of physical resources was significantly greater than zero ($\beta = 0.301$, $t = 2.084$, $p < 0.05$). The null hypothesis was therefore rejected because the utilization of physical resources had a significant effect on the performance of students in the KCSE examinations. This indicated that schools that have a higher utilization of physical resources posted a better performance in examinations.

$H0_3$: There is no significant difference in the KCSE performance between schools that have and utilize physical resources and, schools that do not have adequate physical resources.

According to table 4.11, there was a clear difference between the performance of boarding schools (5.05) and the performance of day schools (3.43) in the KCSE

examination. The difference in performance was attributed to the difference in the availability and utilization of physical resources in the two types of school as boarding schools had a higher availability and utilization than day schools. The null hypothesis was therefore rejected.

CHAPTER FIVE

DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents discussion of the major findings, conclusions made, appropriate recommendations and suggestions for further study.

5.2 Discussion of the Research Findings

The purpose of this study was to evaluate the effect of the availability and utilization of physical resources on the KCSE performance of public secondary schools in Marani, Sub-county. The study also sought to establish the difference in performance between boarding schools and day schools and its relationship to the availability and utilization of physicals resources in the two types of schools in the area of the study.

The researcher used a mixed method approach which combines both qualitative and quantitative approaches. The study was carried out in Marani Sub – County which has 32 public secondary schools. The target population consisted 351 respondents, comprised of 32 head teachers, 313 teachers and 6 Curriculum Support Officers. Census sampling was conducted to select 32 principals after which stratified random sampling was conducted to select 155 teachers and 3 Curriculum Support Officers in proportions of 53% from each category.

5.2.1 Effect of the Availability of Physical Resources on the Performance of Students in KCSE Examinations

The first objective of the research was to establish the effect of the availability of physical resources on the performance of students in KCSE examinations. For the purposes of this discussion, the availability of physical facilities was categorized into

three; the most available facilities, the least available facilities and those facilities that were not available. The most available facilities are those that were available in more than 50% i.e. more than 16 out of 32 schools. On the other hand, the least available facilities are those that were available in less than 50% of the schools in the area of study. Finally, those facilities that were not available are those that were not available in any school in the area of study.

According to table 4.6, the most available physical resources were as follows: Classrooms (100%), playing fields (100%), toilets (100%), science labs (81%), water storage facilities (81%) and dining halls (50%). Each of these facilities was available in more than half of the schools in the area of study. On the other hand, the least available facilities included: Teachers' quarters/accommodation facilities (37.5%), school halls (34.4%), school canteens/shops (18.8%), computer labs (19%), libraries (12.5%), games stores (12.5%), guidance and counseling rooms (9.4%) and home science facilities (3.1%). Finally, physical facilities that were not available in any of the schools in the area of study were as follows: chapels/mosques, laundry facilities, health facilities, gymnasiums and agriculture rooms/facilities. These findings reveal that more than half of the schools in the area of study have a low availability of physical resources.

Further the Curriculum Support Officers (CSO) who were interviewed by the researcher also corroborated these findings by revealing that there was a low availability of physical resources and that the most critical facilities such as laboratories, libraries and computer labs were the most unavailable. Bosibori et al., (2015) confirmed that most schools in the rural areas are in dire need of physical resources such as libraries and as a result, majority of these schools have been registering dwindling results in the national

examinations. Therefore, these findings confirm that there is a low availability of physical resources in the research area.

Concerning the effect of the availability of the physical resources on the KCSE performance of students, most of the respondents (67.7% of head teachers, 87.6% of teachers and 66.7% of the Curriculum Support Officers) were in agreement that the low availability of the physical resources had negatively affected the performance of students. This was consistent with the findings of Akomolafe and Adesua (2016) that the reduction in the academic performance could be traced back to the lack of infrastructure. Further, the study identified classrooms, toilets, libraries, laboratories, school buildings, offices and even recreational facilities, as some of the most essential physical infrastructure that would motivate students towards learning, and optimize the quality of teaching by teachers in those schools. Most of these facilities were the least available in the current study, and this can be linked to the low performance of students in KCSE examinations.

However, 16.3% of the respondents felt that the negative performance of students could be explained by other factors other than the availability of physical infrastructure. For instance, 33.3% of the Curriculum Support Officers noted that the basic facilities such as classrooms were available in every school but they were not adequate. They felt that the available physical resources were not sufficient because the growing population of students was overstretching the available ones. This concurred with the findings of a study by Limon (2016), which established that the inadequacy of school facilities negatively impacts the achievement and performance of students. This was an indication that other than availability, there were other factors that affect the performance of students, such as the ratio of the facilities to the population of students

in school, the age of the buildings and the availability of instructional material and equipment (Bakari, et al., 2014). Similarly, the government of Kenya had also noted that the introduction of the Free Secondary School Education (FSE) in the year 2008 has increased the gross enrolment rate of students. As a result schools were experiencing challenges of overstretched facilities due to overcrowding and this had a negative effect in teaching and learning (Government of Kenya, 2005).

The data analysis also confirms the existence of a strong positive relationship between the availability of facilities and the performance of students in KCSE examinations. Therefore, a low level of availability of these facilities would definitely translate to a poor performance of schools in the national examinations. Further, the resultant regression model was a good fit to the data collected. The resultant equation was as follows:

$$\boldsymbol{Y = 0.139 + 0.066X_1 + 0.301X_2}$$

Holding all factors constant, an increase in the availability of physical resources (X_1) by 1 unit, would translate in an increase in the level of performance of students in Marani, Sub-county by 0.066 units. Likewise, a reduction of the level of availability of physical resources would equally result in a reduction in the level of KCSE performance by 0.066 units. It would therefore be unwise to repudiate the role of the availability of physical facilities in the optimization of academic excellence, especially in the Kenya Certificate of Secondary Education. This is because, these facilities act as an academic muscle that enhances both the teachers and students' motivation and also creates an optimum environment for the learning and teaching experience.

5.2.2 Effect of the Utilization of Physical Resources on the Performance of Students in KCSE Examinations

The second objective of the study was to establish the effect of the utilization of the physical resources on the performance of students in the KCSE examination. For the purposes of this discussion the utilization of physical facilities was categorized into three; those facilities that were highly utilized, those that had a low level of utilization and finally, facilities that were not utilized at all by any school in the area of study. The most utilized facilities are those that were utilized often and very often by more than 50% of the subject schools and consequently scored 4 and 5, respectively. On the other hand, those facilities that have a low level of utilization are those that were utilized; often (4) and very often (5) by less than 50% of the schools in the area of study. Finally, those facilities that were not being utilized are those that were not being used by 100% of the schools and as such, scored 1.

According to table 4.7, the most utilized facilities were; classrooms, toilets and water storage facilities. Each of these resources was utilized very often (5) by 100% of the schools. This however, only accounts for approximately 16% of all the facilities that were being investigated in the study. The least utilized facilities on the other hand included; computer labs (6.3%; 4), science labs (31%; 4 & 16%; 5), libraries (3.1%; 4), home science rooms (3.1%; 4), playing fields (34%; 4 & 18.8%; 5), dining halls (19%; 4 & 16%; 5), schools halls (13%; 4 & 9.4%; 5), teachers' quarters (6.4%; 4 & 13%; 5), games stores (3.1%; 4) and canteens (6.3%; 5). Guidance and counseling rooms were neither often utilized nor were they utilized very often by any school in the location. This accounted for 58% of the facilities under investigation. Finally, agriculture rooms, gymnasiums, health facilities and laundry rooms and chapels/ mosques were never

utilized by any school in the area of study. This was largely attributed to the fact that most schools did not have these facilities.

According to one of the Curriculum Support Officers, the lack of electricity, high cost of maintenance, unavailability of specialized equipment and lack of enough teachers handling the subject had resulted in a low level of utilization of the physical resources. However, some of the physical facilities were not available and as a result, they could not be utilized by the student. The CSO added that the even the available physical resources were not usable because of lack of the necessary equipment. In other schools, some of the buildings were very old and in others, they were too small and the growing population of students could not fit in. For example, most schools used classrooms to conduct experiment because the available laboratories were too small to accommodate all student from each class.

When asked about the effect of the utilization of physical resources on the performance of students, 91.4% of the correspondents agreed that the low utilization of physical resources was responsible for the low performance of students in schools within Marani Sub-County. This concurred with the findings of Akisanya (2010), Yousuf and Ahmed (2005), Kadzera (2006), Olagunju and Abiona (2008) and Ibukun, Akinfolarin and Alimi (2011) that the utilization of physical resources affects the students' performance. This was an indication that the low performance of students in the area of study is attributed to the low utilization of the available physical resources. However, 8.6% of the respondents disagreed when they were asked if the utilization had an effect on performance. For instance; 66.7% of the Curriculum Support Officers argued that the problem was the sufficiency of the available physical resources. Further, they added that most of the available facilities were in a poor condition as some of the buildings

were old, small and lacked the necessary equipment. For instance, most schools used book stores instead of libraries and students could not fit in the small stores. This was an indication that besides the availability and utilization of physical resources, the students' performance in KCSE examinations could also be explained by other factors. From the literature review, Bakari, et al. (2014) established that most schools experienced low performances because of the poor management rather that an issue of the availability of the physical resources.

The data analysis also confirms the existence of a strong positive relationship between the utilization of resources and the students' performance in KCSE examinations. Therefore, a low utilization of these facilities would definitely translate to a poor performance of schools in the national examinations. The resultant equation from the multiple regression was as follows:

$$\boldsymbol{Y = 0.139 + 0.066X_1 + 0.301X_2}$$

Holding all factors constant, an increase in the utilization of physical resources (X_2) by 1 unit, would translate in an increase in the level of performance of students in Marani, Sub-county by 0.301 units. Likewise, a reduction of the level of availability of physical resources would equally result in a reduction in the level of KCSE performance by 0.301 units. It would therefore be unwise to repudiate the role of the utilization of physical facilities in the optimization of academic excellence, especially in the Kenya Certificate of Secondary Education.

5.2.3 Difference in the KCSE performance between schools that have and utilize physical resources and, schools that do not have adequate physical resources.

The third objective was to establish the difference in performance across schools and its relationship to the differences in the availability and utilization of physical resources. The study was concerned with all 32 schools that are located within Marani Sub-County. Out of the 32 schools, 4 were boarding schools while the remaining 28 were day schools.

In the 2017 KCSE results, there was a total of 10 schools that scored 3 and above. Out of the 10 schools, only two had less than 50% in terms of the availability of physical resources. Further, only three of the schools scored less than 3 in the Likert scale for the utilization for the resources. Therefore, most of the high performing schools had both a high level of availability of physical resources and a high level of utilization of the available resources. On the other hand, the remaining 22 schools had a mean score of less than 3 in the 2017, KCSE examination. Out of the 22 schools, only one schools had an availability for physical resources of more than 50%, and only 4 schools scored more than 3 in the Likert scale for the level of utilization of the available resources.

When a comparison was conducted to determine the difference in performance between boarding and day schools in table 4.10, boarding schools had a mean of 5.05 while day schools had a mean of 3.43 in the KCSE examinations. Clearly, boarding schools posted better performances in the examinations. In addition, boarding schools had an average availability of physical resources of 53% out of the list that was circulated in the questionnaires while day schools had an average availability of 41%. On the other hand, boarding schools had a utilization of 3.50 while day schools had a utilization of 2.07. Evidently, the higher performance in KCSE examinations could be attributed to the

higher availability and utilization of physical resources. This was consistent with the findings of the study by Ibrahim et al. (2017) which established that in spite of the fact that the availability of infrastructure alone may not be a sufficient factor to enhance the academic excellence of students, it is quite obvious that those schools that were better equipped and had an adequate funding for and provision of plant and facilities experienced higher academic performance, a higher level of motivation and consequent learning as compared to those schools that either had insufficient or did not utilize the available facilities to their optimum potential.

Therefore, boarding schools had a relatively high level of availability and utilization of physical resources performed better than day schools in Marani, Sub-county. However, this contradicted the findings of a study by Alabi and Oluwole (2012) which concluded that despite the clear and significant difference in terms of facilities available in private and public schools, there was no significant difference in academic performance between the two types of schools.

5.3 Summary of the Study Findings

This section comprises of the summary of the findings according to the study's objectives.

5.3.1 The Effect of Availability of Physical Resources on the Performance of Students

From the findings of the study, there was a low availability of physical resources. This because most facilities were not available in more than 50% of the schools in the area of the research. In addition, libraries, health facilities, mosques/chapels, guidance and counselling rooms, home science rooms, agriculture rooms and computer labs were amongst the least available facilities. Further, most of the respondents (67.7% of head

teachers, 87.6% of teachers and 66.7% of the Curriculum Support Officers) were in agreement that the low availability of the physical resources had negatively affected the performance of students. This indicated that availability of physical resources has an effect in the students' performance in KCSE examinations.

5.3.2 The Effect of Utilization of Physical Resources on the Students' Performance

The study established that there was a low utilization of physical resources. The least utilized facilities included; computer labs, science labs, libraries, home science rooms, playing fields, dining halls, schools halls, teachers' quarters, games stores and canteens. Concerning the effect of utilization on the performance 91.4% of the respondents were in agreement that the low performance of students was attributed to the low utilization of the physical resources. This was a clear indication that utilization of physical resources has an effect in the students' performance. On the other hand, 8.6% felt that other factors such as poor management were responsible for the low performance.

5.3.3 Difference in Performance of Schools that have and Utilize Physical Resources and those that do not have Adequate Physical Resources

The study also revealed that schools that had a higher availability and utilization of physical resources performed better in examinations. Similarly, boarding schools had a higher performance in KCSE examinations than day schools. The average mean posted by boarding schools was 5.05 while the day schools posted a mean of 3.43. Further, the availability (53%) and utilization (3.50) of physical resources in boarding schools was higher than the availability (41%) and utilization (2.07) of physical resources in day schools. This was a clear indication than the difference in performance in KCSE examinations was attributed to the difference in the availability and utilization of physical resources.

5.4 Conclusion

The findings of the study concluded that there is indeed a low level of availability of physical resources in public secondary schools in Marani, Sub-county. The most critical facilities (libraries, guidance and counseling rooms, health facilities and chapels/mosques) were the least available, amongst the physical facilities under investigation. This was due to the unavailability of funding for the development of such resources.

Further, the subsequent level of utilization of the available facilities was equally low, and this was attributed to either lack of equipment requisite for the utilization of such facilities or poor management of the available faculties, and their complementary equipment. Finally, schools boarding schools recorded a higher level of performance in the Kenya Certificate of Secondary Education than day schools.

From the data analysis, the availability of physical resources (computer labs, classrooms, toilets, water storage facilities, agriculture rooms, gymnasiums, health facilities, laundry rooms, chapels/mosques, has a strong predictive relationship with examination performance in schools. Therefore the higher, the level of availability, the level of KCSE performance is also bound to be significantly higher and vice versa. Likewise, a high level of utilization of the available physical facilities also translates to a relative high performance in the national examinations, and vice versa.

5.5 Recommendations of the Study

The researcher made the following recommendations:-

According to the research, there is a low availability of physical resources in Marani Sub-county, especially laboratories, health facilities, guidance and counselling rooms and libraries, which are some of the most essential physical resources. Therefore, there

is a need for the stakeholders to facilitate the provision of enough physical resources in schools. In addition, there is need for the integration of ICT infrastructure in order to minimize the need for physical facilities.

Further, there is a low utilization of physical resources which has led to a low performance of students in KCSE examinations. Therefore, there is need to for the school administration to ensure there optimum utilization of the available physical resources fully, through proper management and replacement of obsolete equipment.

There is need to harmonize the allocation of funds to support infrastructure development across schools in Marani sub-county in order to boost in the performance of students in KCSE examinations.

5.6 Recommendations for Further Research

i. There is need to replicate a similar study which should investigate the effect of the adequacy of the available physical facilities on the students' performance in examinations. This is because, the physical resources may be available but may not be adequate to serve the student population in the various schools in Marani Sub-county.

ii. There is need to do a research on the effect of material resources and learning equipment on the performance of students in Marani Sub-county. This is because physical resources is dependent on the availability of material resources and learning equipment.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR HEAD TEACHERS AND TEACHERS

Instructions:

Dear respondent,

I am a postgraduate student of Nazarene University pursuing a Master of Education Adminstration in the Department of Education, School of humanities and social sciences of Africa. As part of the requirements for this degree, I am undertaking an academic research project entitled:

" I am, therefore, collecting information about the **effect of the availability and utilization of physical resources on students' performance of Kenya Certificate of Secondary Education (KCSE) in public secondary schools in Marani Sub - county, Kenya.**

You have been selected to be part of this study by virtue of your being a teacher in a secondary school in this region. I am therefore kindly requesting you to take some time and fill the questionnaire form attached. Please note that the information that you provide will be treated with utmost confidentiality and that it will be used for academic purpose only. Kindly fill in the questions personally without discussing it with any other person.

This questionnaire is for research purpose only. All the information provided will be treated as highly confidential and your name will not be revealed. Therefore, provide all the information freely, correctly and honestly.

I thank you in advance for your cooperation.

INSTRUCTIONS:

(i) Indicate your response by marking with a tick (✓)

(ii) For open questions use the space provided below the question

(iii) Please answer the questions as frankly, honestly and objectively as possible

(iv) Please answer the questions as they apply to you personally. Do not discuss with any other person

Please answer all questions as honest as possible. All the information obtained will be treated as confidential and will only be used for this study. Tick [√] in the box as appropriately as possible. Do not write your name, name of your school or TSC number on this questionnaire. Do not share your answers with anyone.

SECTION A: BACKGROUND INFORMATION:

Please tick appropriately in box or provide information as necessary

1. What is your teaching experience (years)

0-5 [ ] 6-10 [ ] 10-15[ ] 16-20 [ ] over 20[ ]

2. Please indicate below your academic qualifications.

Master in Education [] B.E.D[ ] P.G.D.E [ ] Diploma [ ]
Untrained [ ] Other [ ]

3. (a) Indicate the type of your school

Mixed day [ ] Girls boarding [ ] Boy's boarding [ ]

b) Under which category does your school fall?

National [ ] County [ ] Sub County [ ]

SECTION B: AVAILABILITY OF PHYSICAL RESOURCES

6) The following items are dealing with the available physical resources for teaching and learning. Which ones do you use in your school? (tick appropriately)

A= Available NA= Not available

Resource	**A**	**NA**
Classrooms		
Computer lab		
Science labs		
Library		
Agriculture rooms		
Home science rooms		
Open fields		
Gymn		
Toilet		
Dining hall		
School halls		
Teachers Accommodation		
Games stores		
Water storage facilities		
Health facilities		
Canteens		
Laundry facilities		
Chapel/Mosque		
Guidance and counselling rooms		
Others, specify		

7. Do you think that your school's performance has been affected by the availability or lack of availability of the following physical resources? (tick appropriately)

Resource	**Agree**	**Disagree**
Classrooms		
Computer lab		
Science labs		
Library		
Agriculture rooms		
Home science rooms		
Open fields		
Gymn		
Toilet		
Dining hall		
School halls		
Teachers Accommodation		
Games stores		
Water storage facilities		
Health facilities		
Canteens		
Laundry facilities		
Chapel/Mosque		
Guidance and counselling rooms		
Others, specify		

SECTION C: UTILIZATION OF PHYSICAL RESOURCES

9. Please rate on the Five –point Likert scale how frequently the available physical are used in the teaching / learning process.

Facility	**Not At All 1**	**Rarely 2**	**Sometimes 3**	**Often 4**	**Very Often 5**
Classrooms					
Computer lab					
Science labs					
Library					
Agriculture rooms					
Home science rooms					
Open fields					
Gymn					
Toilet					
Dining hall					
School halls					
Teachers Accommodation					
Games stores					
Water storage facilities					
Health facilities					
Canteens					
Laundry facilities					
Chapel/Mosque					
Guidance and counselling rooms					

11. What do you think is the reason for the level of utilization of each physical resource, as indicated above?

Physical resource	**Utilization Score**	**Reason**
Classrooms		
Computer lab		
Science labs		
Library		
Agriculture rooms		
Home science rooms		
Playing fields		
Gymn		
Toilet		
Dining hall		
School halls		
Teachers Accommodation		
Games stores		
Water storage facilities		
Health facilities		
Canteens		
Laundry facilities		
Chapel/Mosque		
Guidance and counselling rooms		

10. What do you think should be done to improve the level of utilization of the physical resources?

……
……
……
……

APPENDIX II: INTERVIEW SCHEDULE FOR CURRICULUM SUPPORT OFFICER

1. Comment on the availability of physical resources in schools in Marani sub-county.

……
……
……

2. Comment on the effect of the availability of resources on the performance of students in KCSE examinations.

……
……
……
……

3. Comment on the utilization of physical resources in secondary schools in Marani sub-county.

……
……
……
……

4. Comment on the effect of the utilization of physical resources in the performance of students in KCSE examinations.

……
……
……
……

5. Comment on challenges facing provision and utilization of physical resources.

……
……
……
……

6. Suggest what should be done to improve the provision and utilization of physical resources.....
.....
.....
.....

APPENDIX III: ANU LETTER OF INTRODUCTION



AFRICA NAZARENE
UNIVERSITY

July, 5th 2018

Re: To whom it may concern

Christine Mayaka (13J04CMED026) is a bonafide student at Africa Nazarene University. She has finished her course work and has defended her thesis proposal "**Ava**ilability and Utilization of Physical and **Materi**al Resources and **their** Effect on **Exami**nation Performance of Public Secondary **Schools** in **M**arani Sub – County, Kenya"

Any assistance accorded to her to facilitate data collection and finish her thesis is highly welcomed.

Prof. Rodney **Reed**
DVC, Academic **Affairs**

APPENDIX IV: RESEARCH AUTHORIZATION LETTER FROM MARANI SUB COUNTY

CHRISTINE MAYAKA,
P O BOX 2445-40200 ,
KISII.

14th July 2018

TO,
THE COUNTY DIRECTOR OF EDUCATION,
KISII COUNTY.

THRO,
THE SUB-COUNTY DIRECTOR OF EDUCATION,
MARANI SUB-COUNTY.

Dear Sir/Madam,

REF: PERMISSION TO CONDUCT A RESEARCH IN PUBLIC SECONDARY SCHOOL.

I hereby request for permission to conduct a research in public secondary school in Marani Sub-County.

My Title is: **Availability and utilization of Physical and material resources and their effects on Examinations Performance.**

The study is purely academic; therefore confidentiality of information is assured by the researcher.

Yours faithfully,

CHRISTINE MAYAKA
AFRICA NAZARENE UNIVERSITY
REG NO: 13J04CMED026.

APPENDIX V: RESEARCH AUTHORIZATION LETTER MINISTRY OF EDUCATION

MINISTRY OF EDUCATION

Telegrams: "EDUCATION"MARANI
Telephone:
Email: deomarani@yahoo.com
When replying please quote:
Our Ref: ED/MD/GA/023/163

DISTRICT EDUCATION OFFICE,
MARANI DISTRICT,
P.O. BOX 979 - 40200
KISII
16.07.2018

CHRISTINE MAYAKA
REG. No. 13J04CMED026
TSC. NO. 216988

RE: AUTHORIZATION TO CARRY RESEARCH IN SECONDARY SCHOOLS.

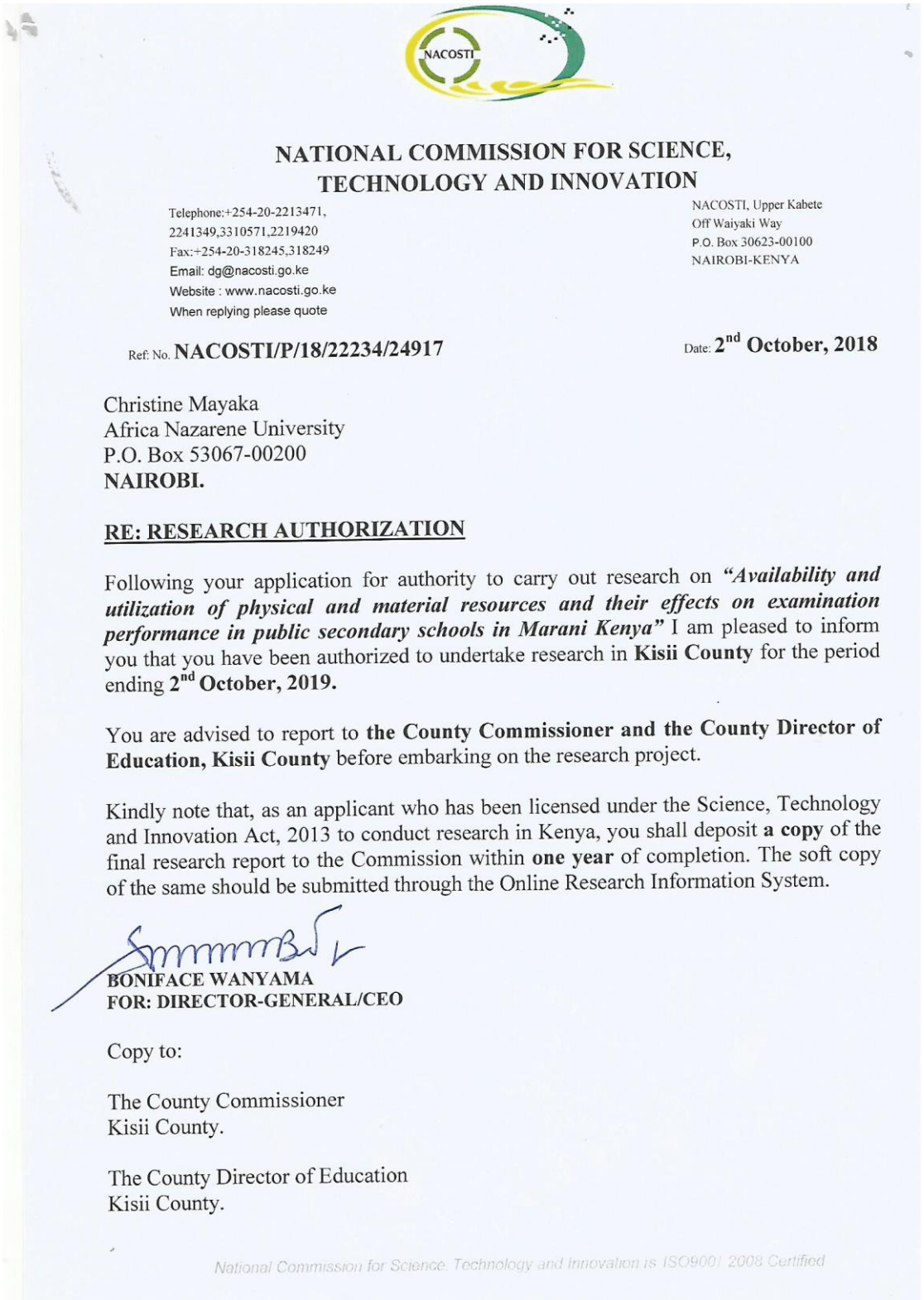
Your letter dated 5th July 2018 refers.
This is to authorize you to carry out research on "**Availability and Utilization of Physical and material Resources and their effects on Examination Performance**" in Public Secondary Schools in Marani Sub County.
The Education office wishes you well in your academic pursuits and expect you to share your findings to enable them improve on the usage.

OMONDI A. ERICK
FOR: SUB- COUNTY DIRECTOR OF EDUCATION
MARANI

DISTRICT EDUCATION OFFICER MARANI P.O. BOX 979 - 40200, KISII

CC:
- DVC, Academic Affairs – African Nazarene University

APPENDIX VI: RESEARCH AUTHORIZATION LETTER FROM NACOSTI



NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/22234/24917**

Date: **2nd October, 2018**

Christine Mayaka
Africa Nazarene University
P.O. Box 53067-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Availability and utilization of physical and material resources and their effects on examination performance in public secondary schools in Marani Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **Kisii County** for the period ending **2nd October, 2019.**

You are advised to report to **the County Commissioner and the County Director of Education, Kisii County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kisii County.

The County Director of Education
Kisii County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified

APPENDIX VII: RESEARCH PERMIT FROM NACOSTI

THIS IS TO CERTIFY THAT:
MS. CHRISTINE MAYAKA
of AFRICAN NAZARENE UNIVERSITY,
2445-40200 KISII,has been permitted to
conduct research in *Kisii County*

on the topic: *AVAILABILITY AND UTILIZATION OF PHYSICAL AND MATERIAL RESOURCES AND THEIR EFFECTS ON EXAMINATION PERFORMANCE IN PUBLIC SECONDARY SCHOOLS IN MARANI KENYA.*

for the period ending:
2nd October,2019

.....
Applicant's Signature

Permit No : NACOSTI/P/18/22234/24917
Date Of Issue : 2nd October,2018
Fee Recieved :Ksh 1000



.....
Director General
National Commission for Science, Technology & Innovation

APPENDIX VIII: KISII COUNTY MAP SHOWING MARANI SUB-COUNTY



APPENDIX IX: MARANI SUBCOUNTY, KCSE PERFORMANCE ANALYSIS

ID	CODE	NAME OF SCHOOL	ENR	LEV	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	X	Y	U	P	ES	EP	TOTAL	MS 17	MS 16	MS 15	MS 14
1	40723102	NYAKEIRI BOYS	33	C	0	0	0	0	2	4	6	3	3	2	12	1	0	0	0	0	33	33	138	4.1818	4.3080	4.8700	5.0600
2	40723203	ITIBO GIRLS	96	XC	0	0	0	2	1	6	7	11	29	29	11	0	0	0	0	0	96	96	390	4.0625	5.2770	8.2020	7.5000
3	40723107	ERAMBA MIXED	55	D	0	0	0	0	1	2	6	7	9	23	7	0	0	0	0	0	55	55	212	3.8545	5.1220	7.8650	8.4700
4	40723106	RIOMA MIXED	53	D	0	0	0	0	4	4	2	4	8	16	15	0	0	0	0	0	53	53	202	3.8113	2.9410	4.7790	4.4020
5	40723202	KENYORO MIXED	177	D	0	0	0	0	0	12	12	22	38	65	28	0	0	0	0	0	177	177	669	3.7797	4.5610	6.5190	6.3100
6	40723104	NYAGESENDA MIXED	52	D	0	0	0	0	1	5	1	5	10	11	19	0	0	0	0	0	52	52	185	3.5577	3.8430	5.0440	6.0000
7	40723103	NYASORE MIXED	43	D	0	0	0	0	0	1	3	4	6	18	10	1	0	0	0	0	43	43	144	3.3488	3.3760	3.7830	4.7800
8	40723109	KIARENI MIXED	59	D	0	0	0	0	2	1	2	4	11	19	20	0	0	0	0	0	59	59	196	3.3220	4.1270	5.3640	4.9600
9	40723206	ENTANDA A MIXED	97	D	0	0	0	0	1	2	5	8	15	33	33	0	0	0	0	0	97	97	317	3.2680	4.5880	6.0000	5.8200
10	40723211	NYAKEYO C.O.G MIXED	19	D	0	0	0	0	0	1	0	2	3	5	8	0	0	0	0	0	19	19	60	3.1579	2.6000	3.8400	3.8500
11	40723214	MESARIA MIXED	33	D	0	0	0	0	0	1	0	5	1	5	17	1	3	0	0	0	33	30	86	2.8667	2.3500	3.5530	3.4200
12	40723201	ITIBO BOYS	37	XC	0	0	0	0	0	0	1	1	9	9	15	2	0	0	0	0	37	37	106	2.8649	3.2490	5.1490	5.8900
13	40723210	ST JORAM ASANYO	42	D	0	0	0	0	0	1	2	3	4	9	20	3	0	0	0	0	42	42	120	2.8571	3.9590	5.3450	4.7400
14	40723116	NYAGOTO MIXED	41	D	0	0	0	1	0	1	1	1	4	9	21	2	1	0	0	0	41	40	114	2.8500	2.7200	4.3890	_
15	40723207	NYANKANDA MIXED	42	D	0	0	0	0	0	1	2	1	6	9	21	2	0	0	0	0	42	42	119	2.8333	2.7790	3.8339	3.7600
16	40723101	ST MONICA MARANI GIRLS	40	C	0	0	0	0	0	0	2	2	2	13	21	0	0	0	0	0	40	40	111	2.7750	3.4000	4.7370	5.2500
17	40723204	ST. JOHNS METEMBE	33	D	0	0	0	0	0	1	1	1	4	6	18	2	0	0	0	0	33	33	90	2.7273	2.6560	3.7000	4.3300
18	40723208	NYAKOORA MIXED	78	D	0	0	0	1	0	1	3	3	11	8	43	8	0	0	0	0	78	78	211	2.7051	2.9550	4.0640	4.3400
19	40723110	ENGOTO MIXED	26	D	0	0	0	0	0	0	2	0	4	4	12	4	0	0	0	0	26	26	68	2.6154	2.4100	3.7200	3.7600
20	40723212	MOSOCHO PAG MIXED	29	D	0	0	0	0	1	1	0	0	4	5	11	7	0	0	0	0	29	29	75	2.5860	2.0330	3.1740	2.6900
21	40723213	NYANSAKIA MIXED	31	D	0	0	0	0	0	0	0	3	3	7	13	5	0	0	0	0	31	31	79	2.5483	2.6400	4.6000	4.6100
22	40723112	NYABWOROBA MIXED	26	D	0	0	0	0	0	1	1	0	1	4	18	1	0	0	0	0	26	26	66	2.5385	2.4860	3.6580	3.5400
23	40723209	TAMBACHA COG	140	D	0	0	0	0	2	6	1	7	4	20	80	20	0	0	0	0	140	140	355	2.5357	3.3100	3.7410	4.4800
24	40723114	NYAKOME FRIENDS	33	D	0	0	0	0	0	0	0	1	2	12	15	3	0	0	0	0	33	33	82	2.4848	2.6000	3.8400	3.5990
25	40723113	NYAGONYI MIXED	41	D	0	0	0	0	0	0	0	1	3	11	24	2	0	0	0	0	41	41	100	2.4390	2.8500	3.9520	4.3500
26	40723205	GAMBA SDA	93	D	0	0	0	0	1	0	1	5	8	14	48	15	0	0	0	0	93	92	224	2.4348	2.4390	3.6330	3.4030
27	40723108	GETURI MIXED	105	D	0	0	0	0	1	2	3	5	6	8	61	19	0	0	0	0	105	105	254	2.4190	2.6530	4.1300	3.7000

28	40723115	MASAKWE MIXED	18	D	0	0	0	0	0	0	0	0	0	5	9	4	0	0	0	0	18	18	37	2.0555	2.3300	3.6250	2.5900
29	40723105	SENSI MIXED	33	D	0	0	0	0	0	0	0	0	1	6	19	7	0	0	0	0	33	33	67	2.0303	2.5560	3.2730	3.1000
30	40723216	MANYANSI MIXED	43	D	0	0	0	0	0	0	0	0	2	4	22	14	1	0	0	0	43	42	78	1.8571	2.5560	_	_
31	40723215	IKURUMA MIXED	35	D	0	0	0	0	0	0	0	0	0	1	15	18	0	0	1	0	35	34	51	1.5000	_	_	2.1700
32	40723111	NYOTA MARANI SEC	39	D	0	0	0	0	0	0	0	0	0	0	16	23	0	0	0	0	39	39	55	1.4103	1.5500	1.8130	1.9400

Source: Ministry of Education, Marani Sub-County Office.