INFLUENCE OF PLANNING OF PHYSICAL FACILITIES ON THE PROVISION OF QUALITY LEARNING ENVIRONMENT IN SECONDARY SCHOOLS IN NAROK NORTH SUB-COUNTY, KENYA

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EGERTON UNIVERSITY

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DECLARATION AND RECOMMENDATION

Declaration

I declare that this is my original work and has not	been submitted previously to this or any		
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DEDICATION

This thesis is dedicated to God Almighty for His sufficient grace all through the entire period. To my wife Mary Waithira, my children Christasher Kibuthu and Abigail Wangui, who have helped me and put up with me through this entire process. Also my parent's Francis Kibuthu and Ann Wangui.

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ABSTRACT

The responsibility for planning of school physical facilities should involve all stake-holders in the school, to ensure that every child has a favorable learning environment for quality education. The purpose of the study was to determine the influence of planning of physical facilities on the quality of learning environment provided by secondary schools in Narok North Sub-County. The study objectives were to determine whether secondary schools use government provided guidelines on construction of school physical facilities, to determine the quality of school physical facilities provided for teaching and learning, to determine the adequacy of school physical facilities provided for teaching and learning and to determine the relationship between planning of school physical facilities and quality of learning environment in secondary schools in Narok North Sub county. The study used the descriptive survey research design. The target population consisted of one Sub-County Director of Education (SCDE), 23 principals, 345 teachers, and 1150 students from 23 public and private secondary schools in Narok North Sub-County. A random sample of, 100 teachers and 120, form three students was selected for the study. The study sample also included one SCDE and 23 principals who were purposively selected, to give a total of 267 respondents. The instruments for data collection were questionnaires for teachers and Form Three students. An interview schedule was administered to the administrators. The instruments were subjected to content and face validity through expert judgment by university supervisors. Reliability was estimated using Cronbach's Alpha coefficient, which was accepted if it was over 0.7. The reliability of the teachers' and students' questionnaires were 0.9 and 0.875 respectively. The major findings indicated that a majority of the school administrators were aware of the existence of government approved building guidelines. However they did not adhere to them when putting up school buildings. Most of the administrators also observed that there was no enforcement mechanisms in construction of school buildings and no inspection of facilities were carried out by the government. Teachers observed that the classrooms had good quality lighting, ventilations to provide a high indoor air quality, while other aspects of the classroom did not meet the standard for inspirational setting for learning. This was because classrooms were inadequate resulting into overcrowding and, without enough furniture. The students concurred with most of the perceptions of their teachers. On the issues of sanitation facilities the respondents agreed that the facilities were the most neglected. The study found that there was a statistically significant relation between planning, adequacy and quality of physical facilities of schools. Based on these findings it is then recommended that government to use qualified building constructors, conduct regular inspection of school facilities to ensure compliance with construction guidelines and therefore ensure provision of adequate quality learning environment. These findings are likely to benefit the ministry of education and the school administrators, in understanding the importance of planning of school physical facilities, in order to provide quality learning environment, hence improve the quality of education.

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ABBREVIATIONS AND ACRONYMS

AFT American Federation of Teachers

BEST Building Educational Success Together

CDF Constituency Development Fund

DEO District Education Officer

EFMP Educational Facilities Master Plan

FPE Free Primary Education

GoK Government of Kenya

IIEP International Institute for Educational Planning

ISA Interview Schedules for Administrators

MOEST Ministry of Education, Science and Technology

NEMA National Environmental Management Authority

NGOs Non Governmental Organizations

TFSE Tuition Free Secondary Education

UNESCO United Nations Education, Scientific and Cultural Organization

UNICEF United Nation Child Education Fund

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A school is a special environment that exists for the purpose of enhancing the teaching and learning process. The school physical facilities require proper planning to provide inspirational setting for learning. Berry (2002), observed that effective planning of a school's physical facilities is achieved through good design. A well designed school building is the one which is structurally sound so that it can provide a secure learning environment and able to enhance learning, boost students' and teachers' morale and increase motivation (United Nation Child Education Fund [UNICEF], 2009). However a soundly constructed building that hinders learning may be more a liability than an asset (Lackney, 2008).

Over time, communities and parents have been responsible for and have made substantial investments in school infrastructure. Development partners, churches, Non Governmental Organizations (NGOs) and individuals have also supported communities in order to improve learning environments. Given the importance of these public investments, the school administrator needs to adequately address the issues of planning of educational physical facilities in order to provide quality learning environment (Kenneth & Jeffery, 2006).

Educational buildings need to have learning spaces that support the learning process; are secure, comfortable and provide inspirational setting for teaching and learning to take place (Abend, 2006). The quality of school facilities seems to have direct effect on learning, an effect that is hard to measure. However, research has shown that clean air, good lighting and small, quiet, comfortable and safe learning environments are important for academic achievement (Cash, 1993).

According to a report by United Nations Education, Scientific and Cultural Organization [UNESCO] (2006), some secondary schools are started within existing primary schools which already suffer from inadequate and poor quality facilities. A child in poor quality facilities often feels being disregarded. This could negatively affect students' behavior, attitude and motivation, self esteem, consequently their academic performance (Edward, 2008).

When students perceive that they are being prevented from succeeding due to unpleasant environmental conditions, they become frustrated, angry and loose interest in education (Walwe, 2010). A study by Peterson (2011) indicated that school buildings with sufficient environmental elements such as indoor air quality, ventilation, thermal comfort, day lighting, and classroom acoustics are well-designed and properly maintained, school climate improves and students respond by producing higher academic outcomes. Student success is related to overall school building condition. Furthermore, when a school's facility deteriorates, student absenteeism increases, reducing a student's likelihood of receiving a quality education. The condition of a school's facility sends a message to students, teachers, and administrators about the institution's concern for their academic interests.

In developing countries, low levels of learning among children may partly be attributed to poor or inadequate facilities in schools. A research in India by Govinda and Varghese (1993), indicated that those schools without buildings and which hold classes under trees or in borrowed spaces from other schools or other users, tend to have poor attendance. At the same time, those who attend are inclined to have a poor academic performance. Research shows that availability of the physical facilities has a significant positive influence on the performance of the students. A study undertaken in Nigeria by Shami and Hussain (2005) indicated that the availability of physical facilities in a school had a significant impact on students' performance.

According to Williams, Persaud and Turner (2008), school facilities enable the teacher to accomplish his/her task as well and help the learner to learn and achieve effectively. Additionally, they emphasized that the availability and proper use of school facilities can affect the interest of the teacher to teach effectively in turn that positively affects student's academic achievement. Therefore, the school facilities in the school needs a proper attention as they have a great value in the support of teachers and students morale, motivation and plays a significant role to improve the quality of education.

In Kenya, there is a major backlog of infrastructural provision such as permanent and quality classrooms, particularly in marginalized areas such as North Eastern, Narok, Turkana and Samburu.

Therefore, there has been a marked increase in unplanned educational buildings that are poorly built and lacking basic facilities. At the same time, existing infrastructure is generally

in poor condition due to lack of planning, poor construction standards and inadequate maintenance (UNESCO, 2006). With the significant increase in primary school enrolment following the introduction of Free Primary Education (FPE) in 2003, additional pressure has been put onto the existing secondary school infrastructure. This is likely to lead to poor conditions and overcrowding that may not be conducive to a good learning environment (Republic of Kenya, 2010).

The Koech Commission of Inquiry into the Education System in Kenya placed importance on the provision of school physical infrastructure and attributed declining standards of education to inadequate and unsustainable physical facilities (Republic of Kenya, 2003). Further the Sessional Paper No 1 of 2005 also recognizes the need for additional school infrastructure to ensure the successful implementation of Tuition Free Secondary Education (TFSE) (Ministry of Education Science and Technology [MOEST], (2005). Nyakundi (2010), points out that the Tuition Free Secondary Education in Kenya has led to a rapid expansion in enrolment in secondary schools. It is obvious that such an enrolment will bring about a demand for more school physical facilities. As a result, an additional number of public secondary schools have been started using Constituency Development Funds (CDF). Some of such schools are started within existing primary schools which already suffer from inadequate facilities (UNESCO, 2006).

Schools in Kenya vary significantly in design, size and building materials. The school size, designs and quality have been left to schools and communities with little or no government supervision. This however has resulted into make-shift kind of structures in the name of schools which are likely to hinder the learning process because of their poor quality. One may wonder if there are government construction guidelines that are supposed to be followed during construction of such schools. The size of the classroom, in terms of length and width, should be 7.5m x 5.85m or 7.5m x 6.0m, and should accommodate 30 learners in one seater desks or 40 learners in two seater desks (Ministry of Education, 2008). According to UNESCO (1997) the minimum student classroom space should be 1.5 square meters per pupil with one-seater desk, which would translate to 45 square meters for a room expected to hold 30 learners.

Classrooms that are congested hardly provide space for movement and affect effective teachers' control of classes. An ideal classroom should be spacious to allow free movement, space where students can form round table discussion with movable tables and chairs. The

class teacher should ensure that the desks are arranged in a manner that facilitates easy and orderly movement of learners in the classroom and the space between any two desks should be at least two feet (Republic of Kenya, 2005).

According to the School Safety Manual (Ministry of Education, 2008), school physical infrastructure should be safe and sound to foster quality learning environment. The objective of this manual is to promote a safe, secure and caring environment that facilitates and enhances quality teaching and learning processes in all schools in the country. It recommends that, there should be adequate provision of clean and well maintained facilities such as classrooms, toilets and other sanitation facilities (Ministry of Education, 2008). However, another report on Child Friendly School from the Ministry of Education indicates that primary and secondary schools still continue to experience many challenges relating to overcrowded classrooms and inadequacy of sanitation facilities (Ministry of Education, 2010).

A report from the Narok District Education Office (2008) shows that secondary schools in Narok have an imbalanced provision of educational physical facilities. It is common to have schools with class sizes up to between 80-100 students. In some schools, there are inadequate classrooms, staff offices, laboratories, toilets, and libraries. In some situations it is observed that some secondary schools in Narok North District have structures of different sizes and constructed using different materials varying in quality from mud, timber iron sheet to building blocks. Some classes lack well fitted doors and window-panes, while others have leaking roofs, earthen and dusty floors. Many schools suffer from inadequate maintenance and have dusty compounds that are likely to be hazardous to the health of learners and teachers. This situation does not provide quality learning environment and therefore may have direct or indirect impact on the teaching and learning process and eventually, negatively effecting students' academic performance.

Records from Narok District Statistics Office (2010), indicate that secondary schools in the district perform poorly at national examinations. Several reasons that have contributed to poor performance were given. These include inadequate provision of quality educational facilities, and poor planning of educational physical facilities. Therefore the school managers and parents need to be informed about the conditions of their school facilities in order to

appreciate the difference facilities could make in the quality of education acquired by their children.

1.2 Statement of the Problem

Educational physical facilities need proper planning if they are to provide inspiration learning environments. According to Narok North District Statistics Office (2010), secondary schools in Narok Sub County perform poorly at national examinations. These schools have an imbalanced provision of educational physical facilities. It was observed that some secondary schools had classrooms of different sizes and constructed using different materials varying in quality from mud, iron sheets, timber and stones. In some schools, there were inadequate classrooms, staff offices, laboratories, libraries and sanitation facilities. Others had none, and where they existed, such facilities were poorly planned and maintained. These conditions existed in many schools despite the presence of the Education Health and Safety Standards Act that regulates the provision and maintenance of school physical facilities to provide quality learning environments. These differences in schools' physical facilities could influence the quality of learning environments, student learning behaviour and in turn impact on academic achievement in the schools. It was therefore necessary to conduct this study to determine the influence of planning of physical facilities on the quality of learning environment, and whether this affected the quality of education provided by secondary school in the Sub County.

1.3 Purpose of the Study

The purpose of this study was to determine the influence of planning of physical facilities on the provision of quality learning environment provided by secondary schools in Narok North Sub County.

1.4 Objectives of the Study

The study was guided by the following objectives:

- i. To determine extent secondary schools use government provided guidelines on construction of educational physical facilities in Narok North Sub County
- ii. To determine the quality of school physical facilities provided for teaching and learning in secondary schools in Narok North Sub County.
- iii. To determine the adequacy of school physical facilities provided for teaching and learning in secondary schools in Narok North Sub County.
- iv. To determine the relationship between planning of school physical facilities and quality of learning environment in secondary schools in Narok North Sub County.

1.5 Research Questions

The study was guided by the following research questions.

- i. To what extent do secondary schools use government provided guidelines on construction of educational physical facilities in Narok North Sub County?
- ii. What is the quality of school physical facilities provided for teaching and learning in secondary schools in Narok North Sub County?
- iii. How adequate are the school physical facilities provided for teaching and learning in secondary schools in Narok North Sub County?
- iv. What is the relationship between planning of school physical facilities and quality of learning environment in secondary schools in Narok North Sub County?

1.6 Significance of the Study

The study is intended to assist the stakeholders in the educational sector to understand the importance of planning of school physical facilities and how it influences the quality of learning environment.

The study may also assist the educational planners, school administrators, teachers, parents and learners to appreciate the relationship between planning of school physical facilities and

the quality of learning environment. This study may also help the educational planners and the Ministry of Education to address the planning and quality issues in an effort to provide quality learning environment.

Improvement in quality of educational facilities may be of great importance to the government and the school administrators interested in enhancing teaching and learning process and learning environment. Appropriate planning of educational physical facilities may provide quality learning environment that may support students and teachers in achieving educational goals. It is assumed that with effective planning of physical facilities, and provision of quality learning environment there will be improved quality and education standards in Narok North Sub County and in the country at large. The school managers may appreciate the role of educational facilities, the nature of planning process and to adopt effective methods of facilities planning to improve quality of learning environment for the provision of quality education in Narok North Sub County.

1.7 Scope of the Study

The study was carried out in 21 public and 2 private secondary schools in Narok North District. The target and accessible population consisted of 23 Principals and 345 teachers. Educational official included one District Education Officer. Only Form Three classes were considered because they had spent the longest time in the schools than either form two or one. The study concentrated on the basic facilities that were used by students and teachers on daily basis that could have a direct impact on the teaching and learning process. The physical facilities included the sanitation facilities classrooms and classroom furniture which included desks and chairs. The study limited itself on influence of planning of secondary schools physical facilities on the provision of quality learning environment in Narok North Sub County

1.8 Assumptions of the Study

The study was conducted on the basis of the following assumptions: The questionnaires were adequate instruments for the study; the information given by respondents was honest; school management was aware of the MOE safety standards guidelines and government construction guidelines; Every school provided physical facilities for teaching and learning and the issue of planning, quality and adequacy of school physical facilities were adequately addressed.

1.9 Limitations of the Study

According to Nachmias and Nachmias (2009) limitations are conditions beyond the ability of the researcher that may place restriction on the conclusions of the study and their application to other situations. The study was to determine the influence of planning of physical facilities on the provision of quality learning environment provided by secondary schools in Narok North Sub County. These physical facilities include classrooms, libraries, sanitary facilities dormitories, dining halls and laboratories, but the study restricted itself to the classrooms and sanitation facilities as the basic physical facilities for teaching and learning.

The first limitation was on the part of obtaining information from the students where some were not willing to give information regarding their school for fear of victimization by their teachers. Efforts were made to assure them of confidentiality on their identities. The other limitation was on the part of the researcher to carry out the research in the whole of Narok North Sub County as the topic suggests. The researcher carried out the research in sampled schools.

1.10 Operational Definitions of Terms

The following terms when used in this study had the following meanings.

Adequacy: According to English dictionary it is the quality of being good enough to be acceptable to meet ones need. In this study adequacy refers to quality availability and sufficiency of the secondary school classroom and sanitation facilities where students meet their expectation about the services offered by the school.

Building Codes: According to American Society of Civil Engineering (2005), building codes are a body of rules which specify the minimum requirements a building must meet to ensure the safety and well being of occupants. It is a collection of laws, regulations, ordinances, or other statutory requirements adopted by a government legislative authority that is involved in assuring the adequacy of the physical structures and healthy conditions of buildings.

Child Friendly School: is a school that provides education systems towards quality standards that address all elements that influence the well being and rights of the child as a learner and the main beneficiary of teaching. The schools should provide the conditions and resources necessary for achieving the quality standards (Ministry of Education, 2010).

Facility Audit: According to U.S Department of Education (2003) facility audit is a comprehensive inventory of a school's facilities that provides a standard method for establishing baseline information about the components, policies and procedures of a new or existing facility. It provides information on the status of school facilities.

Facilities Planning: The plan or layout of the building or buildings collectively used for instructional purposes (Fenker, 2004). This involves collective decision making in relation to selection of site for establishment of new schools, adequacy, design and construction of new school plants including grounds, renovation and modernization of old plants. In this study adequacy of learning space, design of school buildings, type of building materials used and use of government building guidelines will be used as indicators of planning of school physical.

Physical Facilities: The school facilities consist of all types of buildings for academic and non-academic activities. According to Nyakundi (2010) school physical facilities refers to structures that facilitate the process of teaching and learning. In this study they include, classrooms and sanitation facilities.

Physical Learning Environment: According to the report by UNESCO (2002), the school grounds, buildings and furniture provide the physical environment for learning. The Physical Learning Environment is physical space in which we learn e.g classroom, lecture, theater or tutorial room (Reston, 2005).

Quality of Educational Physical Facilities: Nightgale and O'Neil (1997) define a quality educational facility as one that is fit for purpose. Cash (1993) provided aspects such as level of comfort, indoor air quality, cleanliness and maintenance as important measures of a quality facility. In this study, the indicators such as overcrowding, adequacy, sanitation, indoor air quality, lighting and acoustic quality, will be used as selected factors to determine quality of educational physical facilities.

School Design Patterns: According to English dictionary, designing is creating a detailed plan of something in skillful or artistic way. In this context, it is planning for building structures and emphasizing on its features such as physical appearance, condition, efficient functioning of school buildings to support teaching and learning process (Brubaker, 1998).

School Stakeholders: Groups of people with roles to play in the running of a school. They include learners, staff, school committee, parents, sponsors, NGOs supporting the school, local community and people in charge of security (BEST partners, 2001).

CHAPTER TWO LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on the role of school physical facilities, planning for school physical facilities, school buildings legal policies and building codes. It also reviews the nature of planning process for school physical facilities, planning and quality of learning environment and also school physical facilities and student academic achievement. The chapter ends with theoretical and conceptual framework to guide the study.

2.2 Concept of Planning for School Physical Facilities

Planning and design of educations facilities for schools, polytechnic, colleges and universities, has vital impact on education outcomes (Ogundele & Moronfoye, 2013). Planning according to Chiuri and Kiumi (2005) is rational process of making a set of decisions for future action, directed at achieving goals and objectives, through the most optimum means. It is also the action of deciding in advance what to do, when, how and who is to do it. Many schools in developing countries are poorly planned, designed and constructed with facilities that are badly laid out, unhygienic, uncomfortable, inaccessible, dangerous and generally not conducive to effective teaching and learning. It is believed that a well planned school will gear up expected outcomes of education that will facilitate good social political and economic emancipation, effective teaching-learning process and academic performance of pupils. Relating this study to international occurrences are the assertions of Williams, Persaud and Turner (2008) who reported that safe and orderly classroom environment, school facilities were significantly related.

Schools with poor quality physical facilities are often brought about not by a lack of resources but may be as a result of inappropriate standards, a lack of proper planning and poor understanding of the links between infrastructure provision and education delivery. Educational systems in developing countries are inherently inefficient due to among other reasons a low budgetary allocation which lowers the quality and quantity of inputs, especially physical infrastructure (Aikens & Barbarin, 2008). Woolfolk (2007) noted that when the communities' economic status islow, they may not be able to support the school financially.

The responsibility of planning of school physical facilities requires expert input from a wide range of stakeholders, to ensure that every child has favourable academic environment for quality education. This implies that facilities' planning is a collective responsibility of the government, school administrators, staff and students of the individual schools and the community where the school is located. Collaborative efforts bring into facilities planning new ideas and perspectives. However, very often most decisions in the school facility planning and design process are considered the domain of school administrators, professional planners, architects, and engineers, with local school constituents and community involvement included at the end of the process (Fenker, 2004).

Building Educational Success Together partners [BEST] (2001), argue that, community involvement in school facility planning provides an open, regular, public process, which can help identify educational and community needs and create solutions for school buildings and other community problems. If members of a community are involved in the process, school facilities are likely to be better designed, better built, better maintained, widely used, and supported by more members of the entire community. In Iran, for example the community, families and students worked together on a school design project to build back better schools after 2001 earthquake.

In African countries, new approaches have been used not only to build schools but also to achieve active community participation in the designing and construction of environmentally sound schools (UNICEF, 2009). Local communities are responsible for building schools and use labour and local materials donated by the community. Examples of such self-help practices exist in countries such as Malawi, Tanzania and Kenya. In Tanzania for example, villagers construct primary school buildings and teachers' houses, but the government provides the construction material.

It is believed that well planned and adequate school facilities will facilitate effective teaching and learning process and academic performance of the students. When a school is envisioned and created with the child at its centre, the physical facilities become interactive places to facilitate learning (Ojedele, 2000).

The phenomena that some schools have surplus facilities and others lack them are an indicator of poor educational planning in schools (Mohammad, 2012). The basic planning and design are the foundation for a good school. The challenge in many countries goes beyond simply designing and building new schools to renovating and converting existing schools into child-friendly school (UNICEF, 2009).

2.3 The Nature of Planning Process of School Physical Facilities

In order for an educational facility to be successful in meeting the needs of learners, a process of planning, design and construction must be followed (Higgins et al, 2005). According to Fisher (2004) planning is the process of preparing a set of decisions for action in the future directed at achieving goals and objectives by optimal means. He proposes that school designs should not be imposed or bought off the shelf; they must be the result of an articulated vision which should be facilitated by architects and designers to create integrated solutions, with the benefit of students and teachers in mind.

School Facilities Planning starts with the development of broad educational goals and specific objectives. A school like any other educational institution should have a good master plan. A schools master plan consists of three sub-plans; economic plan, strategic plan and a physical plan. Economic plan indicates what the objectives of the institution or the investors are, what investments to venture into and the resources available to achieve each of the objectives. A school's physical plan shows the layout of various buildings and facilities within the school site (National Institute of Building Sciences, 2010).

In Developed countries strategic planning has been used in schools leading to school improvement. In USA for instance, strategic planning follows a four step process for planning school physical facilities that is conducting a comprehensive needs assessment, managing the inquiry process, designing school facilities, and evaluating the program. An education strategic planning should contain all important information about school building project and the existence of school physical facilities and building. The main problem is in implementation of these strategic plans on development of the schools (BEST, Partner, 2001).

Planning cannot meaningfully be carried out without accurate information, which should be collected through facility audit as outlined in Educational Facilities Master Plan (EFMP).

An Educational Facilities Master Plan is a long-range plan, often established as a plan for at least a ten-year period. It includes information on the following subjects: educational goals, standards, and guidelines; the capacity in the existing schools and their utilization; community analysis, including current and projected demographics, land usage, development of private schools, plans for water and sewage service expansion and redevelopment

(Kenneth & Jeffery, 2006). It also includes an educational facility inventory and an assessment of the building conditions; historical and projected enrollment data; an analysis of the facility needs and requirements and a description of the process, procedure, and timeline for community participation in the development of the plan.

According to National Institute of Building Sciences (2010), school managers and other stakeholders in the education sector therefore have the responsibility for carrying out need assessment of the physical facilities to determine areas of need to ensure that all the school resources are well planned and managed to avoid wastage. This type of assessment will assist in policy formulation as it relates to facility planning in schools.

An EFMP, once adopted or approved, can be the basis for the development of school physical facilities. Coordination should be encouraged between the different local government agencies and the educational officials in order to facilitate effective educational facility planning. Integrating school facility planning into other planning entities such as local authority and educational facility plans can reduce or eliminate the many negative effects of independent and isolated planning that can lead to such problems as overcrowded schools, underutilized schools, and increased costs for public infrastructure (National Research Council of the National Academies, 2006). These plans establish a framework for moving forward and the basis for decisions and implementation of plans that can be used by educational officials, architects, school board members and administrators of schools (American Society of Civil Engineers, 2005).

A Report by Republic of Kenya (1998) indicates that few secondary schools in Kenya had a school development plan and very few schools have developed strategic plans. This has led to some schools being characterized with inverted priorities, incomplete and dilapidated structures, hence poor learning environment.

The study indicates that many schools do not adopt strategic planning due to inadequate funds, ignorance of existing policies and lack of leadership qualities and commitment which prevent execution of priorities such as building quality physical facilities. Therefore, the Director of Quality Assurance and Standards should ensure regular inspection, offer support and advice to school managers regarding best practices that would ensure planning for quality school facilities (Nyakundi, 2012).

In Kenya building codes exist within the ministries of Public Works, Housing and Planning

and the Local Government. Unfortunately there are no existing building codes within the Ministry of Education. The main challenge facing the building sector is that the existing building codes have not been constantly updated. The building codes indicate that the process of building requires approvals from the local authorities and from the National Environmental Management Authority (NEMA) before undertaking any building project. Several requirements must be fulfilled in order for the processes of approvals by these two main approving authorities to be fulfilled (Kenya Law Report, 2012).

The Local Authorities by-laws provide for the requirements of putting up buildings. For instance the local authorities require a developer to provide them with certificates of registration from the registered professionals who are going to be charged with supervising the construction of the building project. This includes the registration certificates of the architect and structural engineer, who ultimately are charged with enforcing quality control and ensuring structural stability of the building as it is being constructed (Republic of Kenya, 2003).

The By-laws with regard to building codes include mandatory and obligatory regulations. Mandatory regulations have to do with the construction and design measures that must be adhered to during construction. Such measures include fire exits points, outside stairing for tall buildings, installation of firefighting equipment and use of fireproof materials in the construction process.

An obligatory regulation covers protection of individuals utilizing the premises. This puts an obligation on the authorities to protect the people through awareness creation on fire safety and fire fighting and insurance protection against fire (Kenya Law Report, 2012). However, the effectiveness of development control is hampered by among others: lack of capacity to inspect and implement plans and lack of relevant supportive systems for effective enforcement. The building and construction sector has been proceeding without the appropriate planning and building laws and regulations and lack of inspection. The greatest legislative impediment in the building industry today is the law enforcement (Kimani & Musungu, 2010).

A study by Dierk (2003) toward community-based architectural programming and development of inclusive learning environments in Nairobi's slums, indicate that lack of Government follow up has paved way for special interests in the construction of schools

especially by private investors who establish schools as business opportunities to fetch fees, levies and development funds.

2.4 Planning and the Quality of Learning Environment

Ensuring that all children are safe and able to learn is an essential role of the school planning. Effective educational facilities should address the total quality learning environment including general sanitation, air quality, noise control, good lighting, appealing colour and general comfort provided by temperature and climate (National Research Council of the National Academies, 2006). There are many factors that influence a school's physical design, such as environmental and climatic conditions, building materials, financial resources and priorities (UNICEF, 2009). Culp (2005) discussed some environmental factors that effected the learning environment. They were:

Indoor Air quality

Poor indoor air quality had been associated with increased student absenteeism. The American Lung Association ([ALA], 2002) found that children in American schools missed more than 10 million school days each year because of asthma caused by poor indoor air quality in schools. Poor indoor air quality caused illness, such as asthma and other illnesses resulting into students having difficulty in concentrating thus affecting their achievement. This meant that students and teachers in a physical facility with poor indoor air quality cannot perform as well as the healthy students and teachers (American Federation of Teachers (AFT, 2008). A study by Schneider (2002) showed that temperature and humidity affected indoor air quality. Indoor air quality promotes or inhibits the presence of bacteria and mold (Schneider, 2002). As the temperature and humidity increased, students' discomfort increased, and their achievement and task-performance deteriorated as attention spans decreased.

Acoustic Quality

Proper and accurate hearing in the classroom is essential to a student's ability to learn. The ability to clearly hear and understand what is being spoken is a prerequisite for effective learning. When this ability is impaired through unwanted noise, students do not perform well (Earthman, 2002). Poor acoustics in the classroom and outside sounds causes' disruption.

A study by Edwards (2006) indicated that significant increases in blood pressure among students in schools are caused by noise. He observed that noise can have major effects on

student behavior and in some cases, achievement. Noise from the rain where buildings are constructed with corrugated iron sheets with no attempt at sound proofing is a big problem and may decrease teaching time, forcing teachers to continuously pause or make it difficult for the students and the teacher to hear one another.

Most of the secondary schools in Narok North Sub-County however, are located away from the urban streets. Nevertheless, secondary schools buildings in Sub County are roofed using corrugated iron sheets. The buildings have no ceilings, therefore, noise from the rain makes students to struggle to hear and concentrate on the lesson. Also when the sun is very hot, the classroom temperatures rises resulting to discomfort among the students making learning difficult.

Overcrowding

With the number of students enrolled in schools increasing, schools are forced to put more children in each classroom or use smaller spaces as classrooms. Overcrowding is where schools accommodate more learners than the ideal for the available space, this leads to overcrowding, which can have negative effects on students and teachers. This can result into increased discipline problems and distractions. Reima (2003) argued that when students are overcrowded those at the back found it difficult to see what is written on the chalkboard and teachers could not walk in between the seats to check students work. Therefore a classroom should be designed with effective communication and interaction in mind. He found that when learning space quality was high, teachers were more likely to be sensitive, motivated, friendly and encouraging in their manner towards students (Healthy Schools Network, 2013).

Lighting Quality

Lighting in a classroom is one of the most critical physical characteristics that impacted the teaching and learning process. Visual environment affect a learner's ability to perceive visual stimuli and affect his or her mental attitude, and thus performance (Moore, 2008). Studies by Lemasters (1997); and Schneider (2002) pertaining to school facilities, student achievement, and student behavior found that daylight fostered higher student achievement. Students could not study unless the lighting in the classroom was adequate. Natural light was one type of light that influenced peoples' minds and bodies (Schneider, 2002). Classrooms and occupied buildings should be well-lit to ensure that the learners do not strain while undertaking learning activities.

2.5 Quality of Classroom Learning Environment

Although teaching and learning can take place in many settings, a physical educational space that is dangerous, filthy, haphazardly constructed, and lacking in basic facilities cannot reasonably fulfill its intended purpose. A Quality learning environment provided by a physical facility is the one that adequately supports the desired educational programme or enables the development of learning environment that supports teaching and learning process (Schneider, 2004).

Aspects such as level of comfort, indoor air quality, cleanliness and maintenance are important measures of a quality facility (Culp,2005). According to Chan (1996), students

responded to good and poor learning environments by expressing positive or negative attitudes. A good learning environment frees students from physical distress, makes it easy for them to concentrate on school work. With a positive attitude towards their learning environment, students learn with high motivation and can be able to demonstrate better performance.

A healthy school environment is the key to a high student performance. A good physical environment facilitates learning while a poor physical environment inhibits a students' ability to learn. The physical facilities where learning occurs need to have adequate space and inspirational setting (Berry, 2002). Learning space is not just a structure, but it is about the social relationships within the space, that is an interaction between physical and social spaces. McGregor (2004), claimed that the space is made by social aspects. He continued to argue that the way learning space is organised can tell students much about adult expectations for them.

Schneider (2004), argued that a measure of a quality of educational facility is whether the facility adequately supports the desired educational programme or enables the development of a learning environment that supports the teaching and learning process. This is a critical measure of a quality learning facility. Yurko (2005), argued that space quality was a function of an educational facility. Space was observed to be an important factor in providing a rich environment for learning. Examples of space quality are a learning facility having adequate sized classrooms, availability of natural lighting and a welcoming atmosphere. Cash (1993) provided other aspects such as level of comfort, cleanliness and maintenance as important measures of a quality facility. However there is no consensus on what a quality facility is or how to effectively measure it (Ndirangu & Udoto, 2011).

Kate (2000), observed that the prospect of designing an environment for children can be intimidating for many people, as they are not sure where to start or how to go about it. It is a complex process, but for the person who just wants to improve their learning environment, simple changes can make a whole difference. She indicates that a first step in making changes is to acknowledge the role of the environment in children's lives.

The environment that children experience in their early years of life are responsible for creating their understanding of many concepts such as giving them spatial awareness, educating their senses, nourishing their curiosity and encouraging their interaction with each

other. For some children with special needs, this process does not happen so spontaneously. For them you need to be aware of their skill level and preferences in order to piece together activities and sensory information in a way that will entice them to interact with their surroundings (Olson & Kellum, 2003).

School and home-based factors are responsible for determining the status of learners' health. For instance, the school factors that affect learners' health include the state and condition of physical facilities. For example, a dusty, unclean floor can result in respiratory problems for learners. The lighting, ventilation and acoustics also affect learners' health. Poor lighting can, for example, lead to eye problems. When the rooms are not properly ventilated, respiratory problems can occur. Poorly ventilated rooms can also lead to the spread of communicable diseases. Poor acoustics not only lead to learning distractions but also to hearing problems (Culp, 2005).

As elsewhere in Sub-Saharan Africa, the schools in Kenya suffer from poor learning environments and are beset with problems that affect the ability of students to learn and teachers to teach. School environments must be child friendly with facilities that meet the needs of all learners, have welcoming, healthy and clean environment (Mohammad, 2012). The classroom is supposed to be an exciting and stimulating place for teachers and the learners. However, this is not always true with schools in Kenya. Some of the educational facilities vary in size, design and building materials thus the learning environment does not provide inspirational setting for teaching and learning process to take place (Ministry of Education, 2010). Many schools in Kenya, especially schools in slums, inner town and marginalized areas are unfit for learning (UNESCO, 2002).

2. 6 Government Guidelines in Construction of School Physical Facilities

Before the planning and design process begins, it is important to consult the country's existing building regulations. In some countries, the government may not have highly defined building regulations.

The regulations that may exist may not reflect current quality standards to protect buildings against potential disasters, such as floods, fire outbreaks, or against hazardous conditions or toxic building materials and finishes. In that case, it is important to consult planners to recommend the adoption of international standards for given hazardous profiles (UNICEF, 2009).

In many countries there are building codes and guidelines on quality and size of school physical facilities to ensure quality and better performance in education. Building codes are a collection of laws, regulations, ordinances, or other statutory requirements adopted by a government legislative authority that is involved in assuring the adequacy of the physical structures and healthy conditions of buildings. They are a body of rules which specify the minimum requirements a building must meet to ensure the safety and well being of occupants. Building codes may provide detailed instructions that stipulate particular methods, materials and building standards of varying specificity. The rules establish predictable, consistent minimum standards that are applied to the quality and durability of construction materials (American Society of Civil Engineering, 2005).

A minimum requirement means that the construction meets the criteria of being both practical and adequate for protecting life, safety, and welfare of the public (American Association of School Administration, 1999). Building codes may be defined and enforced at a national, regional or local level. In countries s.uch as United States and India, it is the responsibility of the state or the local government to adopt a building code and enforce it. In the case of India, construction regulations fall under the jurisdiction of the state. The government enforces nationwide adherence to national building codes for all public and private schools. Where measures prescribed by the building codes are not met, responsible officials are subjected to disciplinary action (Stevenson, (2007).

Architectural Design Guide for East Africa (2006) indicates that where construction is going on, supervision should be done by a qualified construction manager with the approval from the Ministry of Education to ensure quality of the workmanship and quality structure. In Kenya, the government through the Ministry of Education provides the legal policies that guide construction of school buildings for the provision of quality education (Nyakundi, 2010).

The Safety Standards Manual for schools (Ministry of Education, 2008), indicate that all the educational physical facilities should be adequate, well located and that they comply with the provisions of the Education Act (CAP 211), Public of Health Act (Cap 242) and Ministry of Public of Works buildings standards and regulations. The Education Act spells out what constitutes a school. The Act defines the physical location of a school and the number of students a school should have. The revised Education Act of 2012 defines a school as an institution or assembly of not less than ten pupils for the purpose of receiving regular instruction. In this act, school includes any part of the school and any building used in

connection with the school. However the Education Act does not provide sufficient information regarding the building regulations and standards in planning and construction of school buildings (Kenya Law Report, 2012).

The Public Health Act outlines health conditions to be observed in a school. Waste disposal should be done in accordance with safety and health standards. Buildings should observe hygiene and health standards. Health officials are required to inspect whether schools meet the standard and are fit for children, but this is rarely done (Republic of Kenya, 1980). Most of the schools do not meet the basic standards for safety and health. For instance existing Nairobi City Council schools are deteriorating. Many schools have problems with burst sewers and garbage dumps that pose a health hazard to school children (Njuguna, 1997).

Nearby factories and public transport often create excessive noise and pollution, which interfere with students' concentration and contribute to respiratory problems. Lack of maintenance of the roads and public spaces causes problems with dust, especially when school grounds lack vegetation to cover the soil. There is serious degradation of the environment at many school locations, and studies have shown that these environmental problems contribute to recurring illnesses among school children (Dierkx, 2002). The Ministry of Public Works Act gives guidelines on; composition of building materials, forbids construction in marsh places and building size and height. It forbids setting of building without plan. According to the Ministry of Education (2008), every school is supposed to have a site plan to facilitate organized and appropriate development and a school plan approved by the Ministry of Public Works.

The by-laws of local authorities define residential and business areas and where to set up temporal and permanent buildings. Any construction should conform to local authorities' by-laws. Despite provision of these legal documents, secondary schools in Kenya vary significantly in quality of physical facilities. This variation may be an indication of government's disregard for planning and development of a building regulatory framework. Hence planning and building of schools has been left to schools and communities, with little or no government supervision. This has resulted into make-shift kind of structures that hinder the learning process because of their poor quality (Munda & Tanui, 2010).

Otechi (2007) argues that there are no proper recommendations and implementation for school building regulatory framework in Kenya. He outlines the key problems that face school

buildings regulatory framework in Kenya. They include the absence of national safety strategy, insufficient awareness of international building standards, an inability to reinforce building controls and development initiatives. He also indicates that there is an absence of a competent authority to implement and certify basic building code requirements. Existing regulatory agencies are underfunded, lack skilled staff and other necessary resources resulting into inadequate inspection, monitoring and certification of school buildings.

Only through proper building design, sound construction practices, and effective administration of building codes and verification programs, can ensure hazard-free buildings for occupants. Therefore the government through the Ministry of Education needs to revise and provide school building regulatory framework and building codes for proper construction of quality educational facilities.

The government needs to have regular inspections supervision, monitoring and evaluation to ensure compliance with the set standards. It is important that the design and construction of educational facilities be approved and supervised by a qualified architects and engineers approved by the Ministry of Education to ensure adherence to the quality design and structure. Inspection during construction is the only way to independently verify conformity to minimum standards, prior to issuing an occupancy certificate (BEST Partner, 2001).

2.7 Role of School Physical Facilities in Education

Education is a complex process that may be influenced by many factors both inside and outside the walls of a classroom. The school physical facilities can influence learners' attitude and interest towards the school (Culp, 2005). They can either attract and inspire the learners or discourage them from attending school. The school environment refers to factors within the school that influence the teaching-learning process. The school environment includes classrooms, library, technical workshops, teachers' quality, teaching methods, peers, among others variables that can affect the teaching-learning process (Ajayi 2001). The extent to which pupils learn could be enhanced depending on what the school environment provides to the learners and the teacher. Therefore, the design of a school building needed to reflect the instructional needs of the school program, and should be responsive to the changing patterns of educational delivery, and provide a physical space that supports multiple and diverse teaching and learning activities.

Nyakundi (2010) explored the vital role played by educational buildings and facilities in the provision of quality education. He defines school physical facilities as physical structures that facilitate the process of teaching and learning. Physical facilities help to enhance the learning of the students. They include classrooms, libraries, sanitary facilities dormitories, dining halls and laboratories. Such physical structures require proper planning and should be adequate and properly located. School land is the key resource that holds other facilities in the school.

School site plan is a layout showing existing and planned physical facilities such as classrooms, laboratories, library, dormitories, offices and play grounds (Ministry of Education, 2008). School administrators should have a basic understanding of facility assessment, and use this knowledge to evaluate the condition of school buildings and their impact on students' success (Verspoor, 2008).

Research has demonstrated that there is a relationship between student performance and the condition of the school buildings. In Latin America, a study conducted by Williams (2000) found that children whose schools lacked adequate facilities were significantly more likely to show lower test scores and higher grade repetition than those with adequate facilities.

American Association of School Administrators (1999) reported that students were more likely to prosper when their environment was conducive to learning. Environmentally responsive heating, air conditioning and ventilating systems, either in a new or renovated school, provided a more comfortable learning environment.

Adequate provision of school facilities in relation to the students' population is important because the quality of education that children receive is affected by the availability or non-availability of physical facilities (Likoko, S. et al. (2013). Furthermore, provision of necessary facilities in schools provides inspirational environment for students to learn and for effective teaching by the teachers.

In sub Saharan Africa and the poorest countries in Asia, the challenges of providing adequate educational facilities are huge (Verspoor, 2008). In sub Saharan Africa alone, it is estimated that up to US\$30 billion will be required to address the shortfall in provision of suitable and safe learning environments. Typically, classrooms are overcrowded, many buildings and other facilities are inadequate, sites are poorly planned and there is little maintenance.

In developed countries like the United Kingdom and the Unites States of America, teaching and learning may not be affected by similar challenges as in the developing countries. As the developing countries talk of awareness and wastage due to illiteracy of the parents, the developed countries have concentrated in funding their education without fear of any wastage or poor enrolment (MOEST: Report on Sector Review and Development, 2003).

In the developing countries, poor learning environments have always been identified as key factors that lead to poor performance in public schools (UNICEF, 2003). This is due to overstretching of the available resources due to increased enrolment. In Uganda, physical characteristics of the school have a variety of effects on the teachers, pupils and the learning process. Poor lighting, noise, high levels of carbon dioxide in classrooms and inconsistent temperatures make teaching-learning process difficult. Poor maintenance and ineffective ventilation systems lead to poor health among the pupils and higher absentee rates among pupils (Frazier, 2002, Lyons, 2001 and Ostendorf, 2001).

According to the Ministry of Education (2008), the school physical facilities have an important role to play in the attainment of the educational objectives by satisfying the physical and emotional needs of all the staff and students. The emotional needs of students and teachers are met by creating pleasant surroundings, a child friendly atmosphere, and an inspiring environment for effective teaching and learning. If students and teachers are comfortable, then learning becomes much easier and interesting (Nyakundi, 2012).

2.7.1 Challenges Facing School Physical Facilities in Kenya

A study by Dierk (2002) indicates that building a safe, healthy, and environmentally sound educational institutions for children has proven difficult due to overcrowding and inadequate facilities. Kosgey, Maiyo and Chepkurui (2006) observe that despite the large investment in education and the concern for quality, current conditions in schools in Kenya disheartens educationists. Many schools are in a state of disrepair, constant noise, class sizes are too large, and student turnover is too high. The study also observed that many schools do not have electricity or running water, and some have no access to water at all.

Ministry of Education Science and Technology (2005) hypothesizes that education continues to experience many challenges relating to access and equity. Among major challenges facing education sector include inefficient management and planning of educational resources, inadequate infrastructure provision, particularly in marginalized areas, misappropriation and

lack of public financial resources, inadequate supervision, lack of professional labour, and inappropriate use of technologies and materials resulting in low-quality school buildings (Ingubu, Wambua & Kyalo, 2011).

In Kenya, a classroom is basically meant to take up to 20 double desks or 40 single desks, implying recommended 40 students per class (Teachers Service Commission, 2005). A report by UNESCO (2006) however shows that there are over 50 students per class in secondary schools. These do not only result into students' discomfort but also compromises the indoor air quality and overall atmosphere in such classes. Many parents associate the poor students' achievement in public schools to the lack of adequate and poor learning facilities and shortage of teachers.

2.8 School Physical Facilities and Student Academic Performance

The quality of school facilities seems to have an indirect effect on learning, and it is of great concern to educators interested in improving teaching and learning process. School physical facilities may affect not only performance but also the overall physical health of children. They require proper planning in order to improve on learning and academic achievement among the students. Children in poor buildings have been found to exhibit clear signs of sensory irritation, skin rashes, mental fatigue and all other factors with the potential of decreasing the ability of students to perform (Culp, 2005).

Several writers have suggested a number of criteria that may be used to measure quality of facilities. Nightgale and O'Neil (1997) define a quality educational facility as one that is fit for purpose. O'Neill and Oates (2001) explored whether improving school facilities had a positive effect on student behaviour, attendance, student learning and teacher rate of turnover. They found that there was a direct relationship between student achievement and building quality. The study supported the findings that school facilities that were well designed and maintained enhanced the teaching and learning environment for teachers and students.

School physical facilities should have desirable designs which include learner friendly environment, attractive buildings that students would want to go to, rather than the space being purely functional (Bunting, 2004). A study by Earthman (2004) on student academic achievement and building condition concluded that the quality of the physical environment significantly affects student achievement. He claimed that because students spend most of their time learning in school buildings, the facilities influenced how well students learned.

Environmental conditions in schools, which included the inoperative heating system, inadequate ventilation, and poor lighting, affected the health and learning as well as the morale of students and the staff. Earthman found that students in classrooms with large windows, natural lighting, and well-designed skylights performed 19% to 26% better than their peers in classrooms without these features. Environmental conditions in schools, which included the inoperative heating system, inadequate ventilation, and poor lighting, affected the health and learning as well as the morale of students and the staff.

McGowen (2007) investigated the relationship between school facility conditions and school outcomes (student academic achievement, attendance, discipline, completion rates, and teacher turnover). The study found that student achievement, attendance, and completion rates were not statistically significant in relation to school facility conditions however, discipline was. Olson and Kellum (2003) found sustainable schools had good lighting, site plan, good indoor air quality and acoustic and used healthy building materials. The researchers also found that students performed better in schools that were new or renovated recently than in older schools.

In another study on school building design and student learning, Cash (1993) investigated the relationship between school building conditions, student behavior, and student achievement in rural high schools in Virginia, USA. He found significant differences between the achievement scores of students in substandard buildings than those above-standard buildings. Yurko, (2005) found that comfort factors appeared to have more of an effect on student achievement than structural factors. The study observed that high achievement was associated with schools that were air conditioned, enjoyed less noisy external environments, had less graffiti (drawings on the walls), and where classroom furniture and student lockers were in good repair. The quality of school buildings has also been related to student behaviors', including vandalism, absenteeism, suspensions, disciplinary incidents, violence, and smoking (Schneider, 2002).

Buckley, Schneider and Shang, (2004) indicated that students were not the only ones affected by poor quality buildings. Teacher attitudes and behaviours have also been found to be related to the quality of school facilities. The study showed that teacher retention and attrition were significantly related to the quality of school facilities, even when controlling for a host of other factors. Factors that most directly affected the quality of teacher's work life also include indoor air quality, thermal control, noise level and acoustic, inadequate classroom

lighting and the amount of natural daylight (Buckley, 2004). Teachers who perceived a detrimental effect on their health due to building conditions, or who were stressed by high noise levels, poor acoustics and lack of thermal controls were more likely to seek employment elsewhere.

Emphasizing on the importance of school facility planning to students' academic performance in Nigeria, Oluchukwu (2000), asserted that school plant planning was an essential aspect of educational planning.

He went further to argue that unless schools were well suited, buildings adequately constructed and equipment adequately utilized and maintained, much teaching and learning may not take place. Corroborating these, Mark (2002) and Ajayi (2007), maintained that high levels of students' academic performance may not be guaranteed where instructional space such as classrooms, libraries, technical workshops and laboratories were structurally defective. They also emphasized that structural effectiveness; proper ventilation and well sited instructional space were likely lead to successful teaching and learning process in Nigeria secondary schools.

In Kenya, there are no sufficient empirical studies that have directly examined the relationship between buildings and learner achievement. However, studies by Munda and Tawi (2010) and Kaberia (2010), indicate that a close relationship exists between the physical environment and the academic performance of students. For instance, Munda, and Tanui (2010) investigating the relationship between selected education facilities and students' academic performance in secondary school in Bugoma District, established that there was a significant positive relationship between students' academic performance and availability of adequate classrooms among other facilities. A study by Gatabu (2011) on school based factors influencing students' performance revealed that lack of adequate and appropriate physical facilities negatively affected students' performance.

2.9 Theoretical Framework

The theoretical framework to guide this study was based on Sustainable Model Approach to Planning and Designing of Educational Facilities (Brubaker, 1998). The Sustainable Model is the means by which educators and design professionals transform the vision they have of an educational facility into an architectural product. This model focuses on how learning spaces change overtime. Sustainable planning focuses on three premises; firstly, that an educational

facility will remain the anchor for generations of learners, secondly that educational space within a facility need to be efficient and flexible, and finally that building materials and architectural practices must be environmentally friendly to sustain learning in a school.

An educational facility which fails to meet the needs of its stakeholders is the result of educators and design professionals being unable to manage the dynamics of the planning environment. It may be as a result of not obtaining the support, services, and/or materials necessary to design and construct an educational facility that is a physical representation of a clearly articulated educational vision (Frederick, 2006). In the development of this study, it is evident that it is necessary to deal with complexity of the environment in which secondary schools are planned and the concerns regarding the learning environment of schools as learning institutions. Therefore, a construct which endeavored to explain in a systematic way, complex pattern, interactions, and relationships between the physical, social, pedagogical, cultural, and economic components of educational facilities planning is needed. In this study the model will therefore represents a theoretical construct from which design professionals and educators can better organize, understand, analyze, research and communicate complex cause-effect relationships that occur when educational facilities are properly designed and constructed. Educators and design professionals should have the ability to design and construct educational facilities that meets the needs of children and the communities they serve (Frederick, 2006). It will also help to understand the relationships between educational facility planning and provision of quality learning environment.

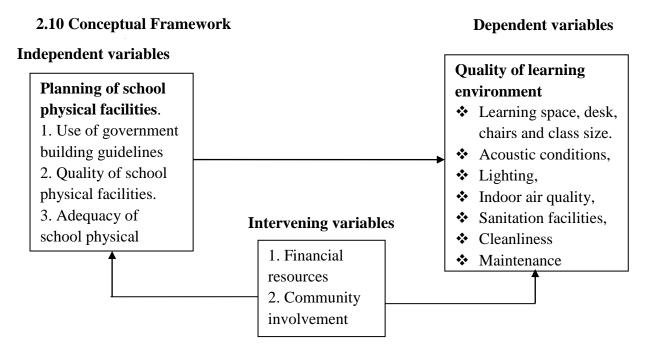


Figure 1: Conceptual Framework on Physical Facilities Planning

Source: (Frederick, 2006)

In Figure 1, the conceptual framework shows the influence of planning of physical facilities (independent variable) on the quality of learning environment (dependent variable). The planning and the condition of school physical facilities determine the quality of learning environment in which teaching and learning process take place. The quality of learning environment was measured in terms of learning space, acoustic conditions, lighting, indoor air quality, sanitary conditions, cleanliness and maintenance. Physical facility provides functional structure which promotes interaction between physical learning environment and social aspect. The learning environments in this context include the physical environment of classroom and sanitation facilities. Physical facilities are expected to provide desirable design and inspirational setting to enable students and teachers to achieve their goals.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research procedures that were adopted in this study. It presents a description of the research design, the location of the study, target population, sampling procedures and sample size. The chapter also describes the instruments that were used as well as validity and reliability of these instruments. The chapter concludes with data collection and analysis procedures.

3.2 Research Design

The study utilized descriptive survey research design that used structured questionnaires and interview schedules to capture information on the perception of influence of planning of school physical facilities and provision of quality learning environment in secondary schools in Narok North Sub-County. According to Mugenda and Mugenda (1999), descriptive research designs report things as they are and therefore the researcher collected data and reported as they were. A descriptive research design helped the researcher to describe and answer questions concerning the current status of the physical facilities and the quality of learning environment in secondary schools in Narok North Sub-County.

3.3 Location of the Study

This study was carried out in 21 public and two private secondary schools in Narok North Sub County. The district has three divisions Olkurto, Central and Mao. The District was chosen since according to statistics from the Narok North District Statistics Office (2010), secondary schools in Narok Sub County perform poorly at national examinations. Secondary schools in Narok North sub-county have an imbalanced provision of educational physical facilities. It was observed that some secondary schools had structures of different sizes and constructed using different materials varying in quality from mud, iron sheets, timber and stones. In some schools, there were inadequate classrooms, staff offices, laboratories, libraries and sanitation facilities.

Others had none, and where they exist, such facilities were poorly planned. Thus poor performance in the examination may have been caused by poor planning of educational

facilities, which resulted into inappropriate learning environments.

3.4 Target Population

Nachmias and Nachmias (2009) define the target population as the entire set of relevant units of analysis or data. Table 1 shows the target population of the study.

Table 1:
Target population

Categories	Population	
Schools	23	
Principals	23	
Teachers	345	
Students	1150	
DEO	1	
Total	1542	

Source: Narok CDE's Office. 2013.

From Table 1 the target population consisted of 23 Principals and 345 teachers from all public and private secondary schools in Narok North Sub-County. Educational officials included one Sub-County Education Officer. The student target population involved the 1150 Form Three students in the 23 secondary schools in the Sub-County. The students were selected from both single sex and co-educational institutions. Form three students were selected because they had spent the longest time in the schools than either form two or one. The Form four classes were excluded because they were likely to be preparing for Kenya Certificate of Secondary Education (KCSE) exam. The total target population for the study was 1542 respondents.

3.5 Sampling Procedures and Sample Size

Sampling refers to selecting a given number of subjects from a target population so as to represent that population (Kombo & Tromp, 2005). Random sampling was used in selecting the students and teachers in each school.

Kombo and Tromp further state that in simple random sampling all the individuals in the defined population have an equal and independent chance of being selected as a member of the sample size. According to Gay (1992) 20% is adequate enough to represent a small

population while 10% to represent a large population. Random sampling was used to ensure a fair representation of all the groups. Table 2 presents the sampling matrix.

Table 2: Sample Matrix

Categories	Target Population (N) Sample size (n)		
Principals	23	23	
Teachers	345	100	
Students	1150	120	
DEO	1	1	
Total	1519	244	

Source: Narok DEO's Office.

The results on Table 2 show—selected sample of 244 respondents from a total of 1519 target population. According to Gay (1992), 10 percent of the accessible population is enough for descriptive studies. He recommends that when the target population is less than 1000 members, a minimum sample of 20% is adequate for educational research. Basing on 10 percent index, a random sample from the 1150 members of the students' target population, a sample of 120 respondents was selected. Basing on 20 percent index, a random sample from the 345 teachers' target population, a sample of 100 respondents was selected. The selected sample was higher than the proposed 10 percent (115) and 20 percent (69) respectively. This was to yield sufficient sample and to cater for non response rate, hence minimize sampling error.

Purposive sampling was used to select the school principals and DEO. Purposive sampling was used because it allowed the researcher to use cases that had the required information with respect to the objectives of the study. Thus all the principals and DEO were selected to participate in the study.

3. 6 Instrumentation

The instruments that were used in this study were the questionnaires for teachers (QFT), questionnaires for students (QST) and interview schedules for the administrators (ISA).

Questionnaire for Teachers (QFT)

The questionnaires had three sections. Section one collected school data. Section two was designed to collect data on quality and adequacy of school physical facilities. The questionnaires in section two A had ten and four closed-ended items on perception of quality and adequacy of classroom respectively. Section two B had four and three closed- ended items on quality and adequacy of sanitation facility respectively. The five-point Likert scale used in close ended item, and the respondents were required to indicate their agreement or disagreement with each of the statement, from strongly agree to strongly disagree. Section 3 collected data on planning of school physical facilities and quality learning environment of the targeted school physical facilities (classrooms and sanitation facilities). The section included 12 open-ended items students to enable the respondent to give information.

Questionnaire for Students (QST)

The questionnaires had three sections. Section one collected school data. Section two was designed to collect data on quality and adequacy of school physical facilities. The questionnaires in section two A had ten and four closed-ended items on perception of quality and adequacy of classroom respectively. Section two B had four and three closed- ended items on quality and adequacy of sanitation facility respectively. The five-point Likert scale used in close ended item, and the respondents were required to indicate their agreement or disagreement with each of the statement, from strongly agree to strongly disagree. Section 3 collected data on planning of school physical facilities and quality learning environment of the targeted school physical facilities (classrooms and sanitation facilities). The section included 12 open-ended items students to enable the respondent to give information.

Interview Schedules for Administrators (ISA)

Interview schedules were used to guide interviews to be conducted with the sub county director of education, and principals on the perception of influence of planning of physical facilities on the provision of quality learning environment in secondary school in Narok North Sub-County. The interview guides contained two sections. Section one had 6 openended items covering government provided guidelines on construction of school physical facilities. Section two included 9 open-ended items covering planning and quality of educational physical facilities.

3.6.1 Validity

Validity refers to the accuracy and meaningfulness of the inferences a researcher makes based on the results of the data collected (Mugenda & Mugenda, 1999). It is related to how accurate the data obtained in the study would represent the variables under study. To ensure that the data that was collected in this study represented the variables under study, the instrument were subjected to scrutiny by university supervisors as well as other experts to ensure validity and the recommendations made were incorporated. Pilot testing of the instruments prior to data collection was undertaken to assist in testing their validity and reliability thus provide the necessary information for making adjustments to ensure validity and reliability.

Mugenda and Mugenda (1999) recommend that the number of cases in pilot testing should not be very large but should be between one to ten percent of the sample size. Therefore ten percent of the actual sample size was considered. Three schools from the neighboring Naivasha district were selected for the pilot testing, with the help of three principals, 15 teachers and 20 form three students from the target population. Schools in Narok North Sub-County were excluded in the pilot study. This was to avoid contamination of the data collected because the subjects was sensitized by first testing or tend to remember their responses during the actual data collection. A review of the questionnaires was then carried out to identify the accuracy and its reliability. Improved modification was then made on the questionnaires and the structured interview to improve the quality of the research instruments hence increased reliability.

3.6.2 Reliability

Reliability is a measure of degree to which a research instrument yields consistent results after repeated trials (Mugenda & Mugenda, 1999). Before the actual data collection, the researcher established the reliability of the instruments through a pilot study. Reliability was estimated by using Cronbach's Alpha coefficient. The reliability of the teachers' and students' data gives a Cronbach's alpha of 0.9 and 0.875 respectively. These Cronbach's alphas indicated that questionnaires were reliable. According to Fraenkel and Wallen (1990), a reliability coefficient of 0.7 and above is acceptable for research purposes.

3.7 Data Collection Procedures

After obtaining a letter of introduction and permission from Egerton University Graduate School, A research permit to conduct the study was sought from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher also sought consent of the Narok County Director of Education (CDE) so as to carry out the study in the Narok North Sub County.

Thereafter the researcher visited the sampled schools to introduce himself to the principals to seek consent to carry out research in their schools and also arrange on when to interview the principals. The structured questionnaire and interview were then administered to the respondents and filled in upon the agreed appointments. Face to face interview were conducted with the sub county director of education and the principals.

3.8 Data Analysis Techniques

The data collected through the questionnaires and interview was analyzed using descriptive statistics. After receiving the questionnaire, the data was organized, coded and entered in the computer for analyses. The interview schedules were analyzed by breaking up the data into manageable trends and relationship (Mouton, 2001). After the interviews the researcher put all information from all the interviews that had one theme or concept into one category. The information within the categories was compared to look for variations in meaning and also comparisons across the categories were done to discover connections between themes and patterns.

Computer using Statistical Package for Social Sciences (SPSS) generated frequencies, means and percentages which were used to determine the perception of influence of planning of physical facilities on the provision of quality learning environment provided by secondary schools in Narok North Sub County. Pearson's correlation coefficient was used to determine the relationship between the dependent variable which was quality of learning environment and the independent variable which was planning of school physical facilities. Planning of school physical facilities was indicated in terms of compliance with government guidelines on construction, the quality of school physical facilities and adequacy of school physical facilities.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of the research findings on the influence of planning of physical facilities on the provision of quality learning environment in secondary schools in Narok North Sub County. These are presented in the order of the research objectives of the study which included:

Data was collected with reference to each of the objectives using questionnaires for students and teachers and an interview schedule for administrators. Descriptive statistics such as frequency distribution and percentages were used to analyze data. The data from questionnaires was edited and cleaned for completeness in preparation for coding. The data from interview schedules was analyzed through thematic analysis. Data was sorted, coded and keyed into Statistical Packages for Social Sciences (SPSS) for analysis.

4.2 Response Rate

Completion rate is the proportion of the sample that participated as intended in all the research procedures. A total of 220 questionnaires were administered to students and teachers and interview was conducted with 23. A summary of the questionnaire return rate is shown in Table 3.

Table 3: Questionnaire Completion Rate

Respondents	Expected responses	Actual responses	%
Teachers and students	220	167	75.9
Administrators	23	13	56.5
Total	243	159	65.4

The researcher managed to obtain a total of 167 questionnaires from the teachers and the students. This represented a response rate of 75.9%. On the interview conducted with 23 administrators, 13 of them successfully provided the required information which represented a return rate of 56.5%.

This can be related to Mugenda and Mugenda (2003) who said a 50% response rate is adequate, 60% good and above 70% rated very good. This implies that basing on this assertion, the response rate of 75.9% of the questionnaires from teachers and students was very good and 56.4% of interview from administrators were deemed adequate. In addition, various studies on the American Psychological Association website describe their response rate as accepted as 10%, 38.9%, 40%, 42%, 54% and 65% and above.

4.3 Characteristics of the Schools Studied

This section presents a description of the characteristics of the sampled schools. Such a description is considered important in providing a better understanding of their characteristics. The characteristics included category and social set up of the schools.

4.3.1 School Category

The study was conducted from a sample of secondary schools in Narok North district. Respondents were required to indicate whether their schools were public or private. The results were as indicated on Table 4:

Table 4: School Category

Classification	f	Percentage
Respondents from Public Schools	138	83.6
Respondents from Private Schools	27	16.4
Total	165	100.0

Source: Field Data

The results on Table 4 show that 83.6% of the respondents were from public schools and the remaining 16.4% were from private secondary schools. The unequal distribution on school category indicates that there were more public secondary schools as compared to private secondary schools in the study area.

4.3.2 School Social Setup

The respondents were also required to indicate whether they were from single sex or mixed schools. The results were as indicated on Table 5:

Table 5: School Social Setup

N=165

Social Set up	f	Percentage	
Boys Only	16	9.7	
Girls Only	35	21.2	
Mixed	114	69.1	
Total	165	100.0	

Source: Field Data

The results on the Table 5 show that majority (69.1%) of the respondents were from mixed schools. This shows that many schools in Narok North district were mixed schools and therefore required different facilities for both boys and girls. Another 21.2% of them indicated that they were from girls only while the rest were from boys' schools.

4. 4 Use of Government Provided Guidelines in Buildings Construction

The first objective of the study was to determine whether secondary schools in Narok North Sub County used government provided guidelines on construction of educational buildings. Interview schedules were used to collect information from the administrators on this item. The results were as indicated on Table 6.

Table 6: Use of Government Provided Guidelines on School Buildings Construction

Responses	f	%
Am aware of government guidelines on construction of school buildings	8	61.5
My school was constructed without building plans.	7	53.8
My school has building plans approved by local authority	6	46.2
Administrators do not adhere to guidelines provided by the government	8	61.5
School buildings not inspected and approved before occupation	7	53.8
No certificates of occupation issued after completion of construction.	9	69.2

Majority (61.5%) of the school administrators reported that they were aware of the existence of government provided guidelines like the Education Health and Safety Standards on construction of classrooms and other school buildings. Despite this awareness, more than 60% of the respondents reported that they did not adhere to these construction guidelines when putting up schools buildings. In an open ended question, principals were requested to indicate whether school administrators in Narok adhere to building rules and regulation provided by the government.

Majority (61.5%) of them were for the opinion that school administrators did not adhere to government provided guidelines during construction of school buildings. Among the reasons given for non adherence was that some schools did not have a copy of construction guidelines because it had not been availed to them by the Ministry of Education. Those who were aware of the guidelines revealed that inadequate funds were possible constraints in the implementation of government guidelines such as School Safety and Standards Manual.

On the other hand, some of the principals reported non compliance because of time constrains and lack of serious follow up from the inspectors. This confirms sentiments by Oluchukwu (2000) who found out that lack of regular communication to sensitize the various stakeholders on their roles hampers smooth implementation of government guidelines.

Rugut (2003) further found out that Quality Assurance and Standard officers (QASOs) were ineffective in their jobs and did not disseminate new policies of the Ministry of Education (MOE).

This explains why some head teachers felt that they lacked the guidance and support of QASOs, which is necessary for the implementation of policies guidelines. Studies on implementation of safety standards and guidelines in secondary schools have been conducted. Omolo and Simatwa (2010) investigated the implementation of safety policies in public schools in Kisumu East and West Districts, Kenya. The study established that some safety policies were implemented to a lesser extent. They pointed a number of constraints in the implementation of safety policies included inadequate funds, time, lack of qualified personnel, and lack of proper coordination by the MOE. Based on these findings it was concluded that the overall implementation of government guidelines in construction of school buildings was inadequate. Less than 50% of the respondents indicated that their schools had school building plans approved by the local authorities. The Ministry of Public Works Act on building regulation forbids setting up of buildings without approved plans.

According to the Ministry of Education (2008), every school is supposed to have a site plan to facilitate organized and appropriate development and approved by the Ministry of Public Works. The findings of this study reveal that majority of the schools in Narok North were constructed without school plan and approval hence high levels of non-compliance. This is an indication of inadequate implementation of the guidelines.

In New Hampshire in the US for example, before starting any new construction or renovation of school buildings, the contractor responsible for such construction must obtain a permit signed by the Board of Bureau of School Approval and Facility Management before it begins. School construction and renovation projects must meet a variety of laws, rules, and codes administered by a number of state and local agencies. The agencies are designated by administrative rules to ensure that school building plans and specifications meet the requirements for approval (Keep (2002).

Research findings by Otechi (2007) observed that there were no proper implementations of school building regulatory framework in Kenya. He outlined the key problems that faced this framework in Kenya:

They included the absence of national safety strategy, insufficient awareness of international building standards and an inability to enforce building construction guidelines. He also pointed out absence of a competent authority to implement and certify basic building code requirements.

The study further revealed that, more than 50% of the respondents reported that inspection of buildings was carried out during and after construction by Quality Assurance and Standard Officers. According to the Basic Education Act (2013), Education Standards and Quality Assurance Council (ESQAC) should ensure standards and maintain quality, administer policies and guidelines in basic education. QASO are expected to enhance education quality by among other things ensuring that schools have the basic and vital educational facilities (Njuguna, Chege, Thinguri & Makatiani, 2014).

However over 69% of the principals reported that schools were not issued with certificates of completion and occupation despite the inspections. This is an indication that majority of the school buildings were constructed and occupied without proper inspection, supervision and approval by Ministry of Public Works and other relevant authorities. As a result, construction of school physical facilities has been left to the local communities, with little or inadequate government supervision, leading to make-shift kind of structures that are dangerous and hinder the learning process because of their poor quality. Inspection during construction is the only way to independently verify conformity to minimum standards, prior to issuing an occupancy certificate (BEST Partner, 2001).

In the recent past Kenya has witnessed an increasing number of buildings collapsing due to poor workmanship by unqualified artisans. Architectural Design Guide for East Africa (2006) recommends that where construction is going on, supervision should be done by a qualified construction manager with the approval from the Ministry of Education to ensure quality of the workmanship and quality of structure.

The school principals should use professionals in site selection, development and maintenance of school infrastructure. The policy requiring that qualified professionals be used in site planning, construction and maintenance of school building is a safe guard against quacks that are likely to put up unsafe buildings that endanger lives of learners.

In New Hampshire it is a commonly accepted practice to appoint a building committee to work with the local school board in a building project. In a school building program, the building committee assists the school board in making long-range plans, reviews existing school facilities, ensure implementation and adherence to building guidelines (Keep (2002).

Findings from this study revealed that schools were not inspected by qualified construction managers. This could be because of lack of commitment on the part of the respective officers

or absence of a competent authority in the ministry of education to implement and certify basic building code requirements. Lack of qualified personnel in construction of school buildings may be the reason for inadequate inspection, monitoring and certification of these educational facilities. For this reason inadequate inspection of educational buildings was an indication that the government has not put into place proper mechanism for planning, designing and construction of school buildings. This therefore, meant that every school administrator did things in his or her own way, hence, affecting the quality of school buildings in the county.

4.5 Quality of School Physical Facilities

The second objective of the study intended to determine teachers and students perception on the quality of school physical facilities provided for teaching and learning in secondary schools in Narok North Sub County. The study investigated the quality of classrooms and sanitation facilities.

4.5.1 Perceptions on the Quality of Classrooms

On the quality of the classrooms, teachers and students were required to indicate their level of agreement or disagreement with various aspects of the quality of classrooms in their schools. They responded to this item using a 5 point likert scale where 1= Strongly Disagree, 2= Disagree, 3= Not Sure, 4 = Agree and 5= Strongly Agree. Table 7 and 8 indicates the teachers' and students' perceptions on the quality of classrooms respectively.

On the quality of the classrooms, teachers were required to indicate their level of agreement or disagreement with various aspects of the quality of classrooms in their schools. Table 7 shows the perception of teachers on quality of classroom.

Table 7: Teachers Perceptions on Quality of Classroom N=65

Statement	SD	D	N	A	SA
	%	%	%	%	%
Adequate lighting all the time	11.2	31.7	1.0	41.9	14.2
Classroom well ventilated to provide fresh air	12.6	14.7	2.2	41.5	29.0
The classroom temperature is comfortable throughout the day	22.0	20.1	3.6	34.9	19.4
Floors of the classrooms are not dusty or potholed	34.8	30.9	2.3	16.6	15.4
Classroom has a sound proof ceiling which is comfortable to teach in during rainy season	34.8	35.9	0.0	16.1	19.6
No noise from surrounding environment disrupting					
learning	17.4	21.2	2.0	38.3	21.1
Generally, the classrooms provide quality learning	23.2	22.5	4.8	24.3	25.2
environment					
Mean of means	22.7	24.7	2.2	27.7	21.3

Table 7 reveals that 56.1% of the teachers agreed that the classrooms had adequate lighting all the time. On ventilation 70.5% of teachers agreed that the classrooms were well ventilated hence provided adequate circulation of clean air. On classroom temperature only 54.3% of teachers agreed that classroom temperature was comfortable for study purposes throughout the day. The findings also show that 65.7% of the respondents reported that the floors of their classrooms were not well maintained and had potholes and were dusty.

On the same note 70.7% of them reported that their classrooms did not have a sound proof ceiling therefore were uncomfortable to teach during the rainy season. At the same time 59.4

% indicated that there was noise from surrounding environment that disrupted learning. The findings on Table 7 further reveal that only 49.5% of the respondents felt that classrooms in Narok North Sub County provided quality learning environment. However a significant percentage of 45.7% of the respondents disagreed with this observation, thus the general condition of the classroom needed improvement in order to provide favourable learning environment.

On the quality of the classrooms, students were required to indicate their level of agreement or disagreement with various aspects of the quality of classrooms in their schools. Table 8 shows the perception of students on quality of classroom.

Table 8: Students Perceptions on Quality of Classroom *N*=102

Statement	SD %	D %	N %	A %	SA %
	/0	/0		/0	/0
Adequate lighting all the time	10.8	28.7	3.0	43.1	13.2
Classroom well ventilated to provide fresh air	9.6	10.2	4.2	46.7	28.1
Classroom temperature is comfortable throughout the day					
	12.0	28.1	9.6	38.9	10.2
Floors of the classrooms are not dusty or potholed	33.3	36.7	0.4	17.4	12.4
Classroom has a sound proof ceiling which is comfortable					
to teach in during rainy season	30.5	31.7	3.0	18.0	15.0
No noise from surrounding environment disrupting					
learning	14.4	22.2	3.0	35.3	21.6
Generally, the classrooms provide quality learning					
environment	7.8	21.6	10.8	34.1	22.8
Mean of means	16.8	23.4	4.98	32.9	18.9

Table 8 reveals that 56.3% of the student respondents agreed that the classrooms had adequate lighting all the time. On ventilation 74.8% of the students agreed that the classrooms were well ventilated hence provided adequate circulation of clean air.

On classroom temperature, only 49.1% of the respondents agreed that classroom temperature was comfortable for study purposes throughout the day. The findings further show that 70% of the students reported that the floors of their classrooms were not well maintained and had potholes and were dusty.

On the same note 62.2% of the students reported that their classrooms did not have a sound proof ceiling therefore were uncomfortable to teach during the rainy season. At the same time

68% of the students indicated that there was noise from surrounding environment that disrupted learning. The findings further reveal that only 56.9% of the students felt that classrooms in Narok North Sub County provided quality learning environment.

From the findings, it can be observed that teachers and students agreed that the classrooms had adequate lighting all the time. From the two categories of the respondents t more than half of the schools were connected with electricity, had adequately windows and doors for entry of daylight. This means that the classrooms and occupied buildings were well-lit to ensure that the learners did not strain while undertaking learning activities.

Research by Lemasters, (1997) and Schneider, (2002) pertaining to school facilities, found that adequate lighting fostered higher student achievement. Quality lighting also allows greater eye comfort and improves student behavior and concentration in class. However almost equal percentage of the respondents disagreed that classroom had adequate lighting. It was likely that those schools with inadequate lighting were not connected to electricity and may have been relying on generators and lamps that may breakdown. Poor lighting can lead to eye problems and also makes students to have problems during their night classes and preps.

On ventilation 70.5% of teachers and 74.8% of the students agreed that the classrooms were well ventilated hence provided adequate circulation of clean air. The results of this finding agrees with that of Olson and Kellum (2003) who showed that better indoor air quality in schools results in healthier students and teachers, which leads to less absenteeism and improved student achievement. Schools with good indoor air quality are likely to provide students with higher quality education.

Schools with improper ventilation results into poor indoor air quality which is associated with increased student absenteeism, cases of asthma and other illnesses resulting into students having difficulty in concentrating thus affecting their achievement.

When the rooms are not properly ventilated, respiratory problems can occur. Poorly ventilated rooms can also lead to the spread of communicable diseases (American Federation of Teachers ([AFT], 2008).

On classroom temperature only 54.3% of teachers and 49.1% of the students agreed that classroom temperature was comfortable for study purposes throughout the day. However a

significant percentage of over 40% of the respondents disagreed with this observation. The findings indicate that in some cases classroom temperature was not conducive for study therefore making teachers and students uncomfortable to concentrate during teaching and learning process. Bert (2011) found that the ability to control classroom temperature is crucial for the effective performance of both students and teachers. A good classroom temperature keeps the student comfortable and able to concentrate in class activities. High temperature is irritating and may result to drowsiness.

In some part of Narok North Sub County, day time temperature can be very high and the situation worsens especially in the afternoons when room temperature can be unbearable. This makes teaching and learning difficult because of the irritating heat from the sun. In the cold season learners put up heavy clothes especially in schools located in cold areas of the sub county. In schools with inadequate ventilation they often become damp and could predispose learners to respiratory diseases like asthma and common cold. According to study done by Earthman (2002), good thermal environment of a classroom is very important in enhancing student performance. Such aspects are frustrating and worrying and should be addressed earlier so as not to compromise teaching and learning process.

The findings show that 65.7% of the teachers and 70% of the students reported that the floors of their classrooms were not well maintained and had potholes and were dusty. This was interpreted to mean that most of the classroom floors were dilapidated and was not regularly cleaned to reduce dust accumulation. A dusty and unclean floor can result in respiratory problems for learners and teachers, hence poor performance in education (Culp, 2005).

On the same note 70.7% of the teachers and 62.2% of the students reported that their classrooms did not have a sound proof ceiling therefore were uncomfortable to teach during the rainy season.

Schools in Narok had classroom roofs made of iron sheets which make it difficult to teach during rainy season and hot afternoons. Study by Earthmans (2002) noted that proper and accurate hearing in the classroom is essential to a student's ability to learn. Noise from the rain with no sound proof is a big problem and may decrease teaching time, forcing teachers to continuously pause or make it difficult for the students and the teacher to hear one another. At the same time 59.4 % and 68% of the teachers and students respectively indicated that there was noise from surrounding environment that disrupted learning. This makes students

to struggle to hear and concentrate on the lesson. Poor acoustics not only lead to learning distractions but also to hearing problems. When this ability is impaired through unwanted noise, students do not perform well. Also noise in the learning environment can have major affects on student behavior and in some cases, achievement (Bert, 2011).

The findings on Table 7 and 8 further reveal that only 49.5% and 56.9% of the respondents felt that classrooms in Narok provided quality learning environment. The observation from the respondents that some classrooms were of good quality may be attributed to various government interventions and initiatives that have been meant to improve the quality of secondary education in the country. Among such interventions include, building model schools through economic stimulus programme, provision of grants in Arid and Semi Arid areas in which part of Narok County fall (TSC, 2007). This initiative could therefore explain the improved quality of the classrooms, hence respondents perception that these facilities were of good quality. However a significant percentage of 45.7% of the teachers disagreed with this observation, thus the general condition of the classroom needed improvement in order to provide favourable learning environment. This is an indication that many schools in Narok North Sub County require facility improvement or this may compromise the government effort to improve the quality of education in the country and environmental requirement for child friendly schools (Ministry of Education, 2010).

Studies such as the American National Research Council of the National Academies (2006), indicated that effective educational facilities should address the total quality of the learning environment including general sanitation, air quality, noise control, good lighting, appealing colour and general comfort to provide quality learning environment. According to Manual for Planning and Construction of School Buildings (2006), schools should be designed, built, and maintained in ways that provide adequate air ventilation, maintain proper temperature and humidity conditions.

In the context of school facilities, the environment in which the students learn is very crucial and without a suitable environment, effective learning cannot take place. Bruce (2006) rightly refers the learning environment as the third teacher. He describes the setting of the learning space as an important factor in providing a rich environment to assist in providing a suitable climate for learning. According to Culp (2005), the state and condition of physical facilities are

responsible for determining the status of learners' health and learning outcomes. Classrooms and other facilities therefore need to be repaired, maintained and serviced from time to time in order to enhance quality learning environment.

4.5.2 Perception on Quality of Sanitation Facilities

Respondents were further required to indicate their level of agreement or disagreement with various aspects on the quality of sanitation facilities in their schools.

Table 9: Teachers Perception on Quality of Sanitation Facilities N=65

Statement	SD	D	N	\overline{A}	SA
	%	%	%	%	%
The toilets and bathrooms are safe for use by all students	42.8	24.3	1.2	7.8	23.9
The sanitation facilities have adequate lighting	33.8	30.9	4.1	22.3	8.9
The sanitation facilities are well ventilated	38.5	27.4	3.3	26.7	4.1
Sanitation facilities provide high level of hygiene	35.7	37.2	2.1	22.8	2.2
Mean of means	37.7	30.5	2.7	19.9	9.8

Table 9 indicates that 67.1% of the teachers reported that sanitation facilities were not safe for use by all students. On lighting, 64.7% of teachers indicated that most of the sanitation facilities did not have adequate lighting. At the same time 65.9% of the teachers reported that the sanitation facilities were not well ventilated. Finally on the level of hygiene, more than 72.9% of teachers reported that sanitation facilities in Narok North Sub County were not kept to a high level of hygiene.

Students Perception on Quality of Sanitation Facilities

Students were required to indicate their level of agreement or disagreement with various aspects on the quality of sanitation facilities in their schools. The results are shown in table 10.

Table 10: Students Perception on Quality of Sanitation Facilities *N*=102

1, 101					
Statement	SD	D	N	\boldsymbol{A}	SA
	%	%	%	%	%
The toilets and bathrooms are safe for use by all students	38.2	22.4	1.6	26.5	11.3

Mean of means	33.0	26.7	2.6	24.7	13.0
Sanitation facilities provide high level of hygiene	33.9	34.8	1.2	22.1	8.0
The sanitation facilities are well ventilated	29.2	25.0	3.9	23.3	17.9
The sanitation facilities have adequate lighting	30.4	24.4	3.8	26.9	14.5

Table 10 indicates that 60.6% of the students reported that sanitation facilities were not safe for use by all students in most of the schools in Narok North Sub County. On lighting, 54.8% of indicated that most of the sanitation facilities did not have adequate lighting. At the same time 54.2% of the students reported that the sanitation facilities were not well ventilated. Finally on the level of hygiene, 68.7% of the students reported that sanitation facilities in Narok North district were not kept to a high level of hygiene.

The findings from the two categories of the respondents indicated that sanitation facilities were not safe for use by all students in most of the schools in Narok North district. The sanitation facilities could not satisfy the needs of all the learners hence impacted negatively on students as indicated in this study.

The sanitation facilities provided in the school must be child friendly and should meet the needs of all learners, have welcoming, healthy and clean environment. Schools with such facilities promote quality learning environment that results into effective teaching and learning (Cash, 1993). In mixed schools, girls' sanitations areas must be separate from those of boys and should offer complete privacy. School sanitation facilities especially toilets play a crucial role in maintaining hygiene and self respect.

On lighting, 64.7% and 54.8% of teachers and students respectively indicated that most of the sanitation facilities did not have adequate lighting. At the same time 65.9% of the teachers and 54.2% of the students reported that the sanitation facilities were not well ventilated.

Finally on the level of hygiene, more than 72.9% of teachers and 68.7% of the students reported that sanitation facilities in Narok North Sub County were not kept to a high level of hygiene. This may be caused by lack of enough water to maintain high level of hygiene. The findings of this study indicated that most of the schools did not adhere to set policy measures as outlined by School Safety Manual (Ministry of Education, 2008). The manual describes, and advises on meeting the requirements of safe sanitation facilities which include provision of hand washing facilities, adequate ventilation and lighting, with high standards of hygiene.

According to the manual all sanitary facilities should be in the best condition of repair, serviceability and be inspected regularly. Soap and water should be set outside the toilets for washing hands after use of these facilities and girls washing places should be behind a screen or wall.

The research findings generally indicate that quality of sanitation facilities in Narok North Sub County were neglected, and therefore wanting. This situation needs to be contained by the government and other stakeholders in the education system to protect the gains and initiatives in order to improve quality of education in the country. The findings from this study that school physical facilities especially classrooms, toilets and bathrooms were of poor quality confirm the report by UNESCO (2003) on secondary education reform in Africa. The report noted that in Sub Saharan Africa, school health services, classroom maintenance and furniture have deteriorated so drastically that they cannot meet the educational challenges of the 21st century.

Also the report by UNESCO (2005) on Free Primary Education in Kenya also concurs with this observation. The report indicated that many schools including secondary schools in the country had poor quality facilities. The report noted that many schools were unhygienic, poorly maintained and unappealing to learners.

4.6. Adequacy of Physical Facilities

The third objective of the study was to determine the adequacy of school physical facilities provided for teaching and learning in secondary schools in Narok North Sub County. Adequacies of classroom and sanitation facilities were investigated to provide information on this objective.

4.6.1 Perception on Adequacy of Classrooms

On adequacy of classrooms teachers and students were required to indicate their level of agreement with various aspects on the adequacy classrooms in their schools.

Table 11 and Table 12 indicate the teachers and students' perception on the adequacy of classrooms respectively.

4.6.2 Teachers Perception on Adequacy of Classrooms

Teachers were required to indicate their level of agreement with various aspects on the adequacy classrooms in their schools. Tables 12 indicate teachers' perception on the adequacy of classrooms.

Table 11: Teachers Perception on Adequacy of Classrooms

Statement	SD	D	N	A	SA
N=65	%	%	%	%	%
The school has adequate number of classrooms	36.6	24.1	1.3	25.7	12.3
Classrooms have adequate learning space for movement					
and group discussions.	29.6	35.7	1.0	22.2	11.5
Classrooms are not overcrowded	27.4	38.9	0.0	19.8	13.9
Classroom has enough desks, chairs and tables for all					
students and teachers	28.2	29.4	2.0	19.5	20.9
Mean of means	30.5	32.0	1.1	21.8	14.7

Table 11 shows that 60.7% of the teachers indicated that their schools did not have enough classrooms. On learning space only 33.7% of the teachers indicated that the classrooms had adequate learning space for movement and group discussions. In addition 66.3% the respondents indicated that they classrooms were small and overcrowded. Finally, 40.4% of teachers agreed that classrooms in their schools had enough desks, chairs and tables.

4.6.3 Students Perception on Adequacy of Classrooms

On adequacy of classrooms students were further required to indicate their level of agreement with various aspects on the adequacy classrooms in their schools. Tables 12 indicate students' perception on the adequacy of classrooms.

Table 12: Students Perception on Adequacy of Classrooms

Statement	SD	D	N	A	SA
N=102	%	%	%	%	%
The school has adequate number of classrooms	19.6	22.5	1.3	36.8	19.8
Classrooms have adequate learning space for movement and					
group discussions.	21.9	28.2	3.3	27.6	19.0
Classrooms are not overcrowded	19.6	36.1	2.0	30.0	12.3
Classroom has enough desks, chairs and tables for all					
students and teachers	14.4	27.8	2.2	34.3	21.3
Mean of means	18.9	28.7	8.8	32.2	25.6

Table 12 shows that 42.1% the students indicated that their schools did not have enough classrooms. a significant percentage, 46.6% of the respondents indicated that the classrooms had adequate learning space for movement and group discussions. Further, over 55% the respondents indicated that they classrooms were small and overcrowded. In addition, 57.8% of the students agreed that classrooms in their schools had enough desks, chairs and tables for all students and teachers.

The report from the two categories of the respondents indicated that their schools did not have enough classrooms. Only 38% of teachers and 56.6% of the students agreed with the observation. On learning space only 33.7% of the teachers and 46.6% of the students indicated that the classrooms had adequate learning space for movement and group discussions.

However 65% of teachers and 50.1% reported that classrooms did not have adequate learning space therefore could not be able to move freely and to hold group discussions in the classroom. Lack of adequate learning space hindered interactions among learners on one hand and teachers and learners on the other hand during teaching and learning activities. This could be attributed to small and overcrowded classrooms as indicated by 66.3% teachers and 55.7% students. This may be caused by increased number of students enrolled in a school with inadequate teachers, hence forcing teachers to put more learners in a classroom. Fisher (2004) found that there was a strong relationship among school size, number of students in a class and students' achievement. Students in smaller classes outperformed those in larger classes as measured by Standardized test scores.

Finally, 40.4% of teachers and 57.8% of the students agreed that classrooms in their schools had enough desks, chairs and tables for all students and teachers. The results agree with the findings of the Southern Africa Consortium for Monitoring Education Quality (SACMEQ) (2001), survey which observed that school sitting and writing places were adequate, although much of the school furniture were not in good condition hence needed repair. However 57.6% of teachers and only 42.2% of students disagreed with this observation. This may be interpreted to mean that majority of schools did not have enough desks and chairs in the classroom for teachers. However students and teachers from schools without adequate furniture may be forced to share desks, tables and chairs. This is likely to bring discomfort, embarrassment, making teaching and learning difficult. The study undertaken by Shami and

Hussain (2005) revealed that the availability of physical facilities in a school had a significant impact on students' performance.

The Ministry of Education circular on Health and Safety Standards in Educational Institutions (2001), recommended the furniture in classrooms, especially desks, be appropriate for use by both male and female learners. The circular pointed that poorly constructed or inappropriate desks could lead to physical deformities such as curvature of the spine and contraction of the chest. It may also create tension and fatigue among learners.

The class teacher should ensure that the desks are arranged in a manner that facilitates easy and orderly movement of learners and the teacher in the classroom. Ideally the space between any two desks should be at least 2 feet (Ministry of Education, 2008).

It is important to note that it is through regular internal and external supervision and inspection that provision of these facilities can be assured. Provision of necessary facilities in schools provides inspirational environment for students to learn and for effective teaching by the teachers. Adequate provision of school facilities in relation to the students' population is important because the quality of education that children receive is affected by the availability or a non-availability of physical facilities (Adesina, 1990).

A study on the adequacy of educational facilities and their effect on quality of teacher preparation in emerging private primary teacher training colleges in Bungoma County by Likoko, Mutsotso and Nasongo (2013), found that most of emerging private primary teacher training colleges had inadequate, obsolete and dilapidated facilities unsuitable for preparing competent teachers. They concluded that poor state of school buildings was a clear manifestation of ineffectiveness of the systems of monitoring and regulation of teacher training institutions by QASO.

4.6.4 Average Number of Students in Class

Respondents were further required to indicate the average number of students in a class. Table 13 provides this information.

Table 13:
Average Number of Students in Class

Number N=102	f	Percentage
20-30	3	3.1

Total	102	100.0	
Above 50	55	54.1	
40-50	39	37.7	
30-40	5	5.0	

Table 13 shows that 91.8% of the respondents indicated that classes in their schools had 40 students and above.

54.1% indicated that classrooms had more than 50 students. This contravenes the requirements by the Ministry of Education (2008) and Teachers Service Commission (2005) which recommend a classroom to take up to 20 two seater desks or 40 single desks, implying 40 students per class. The finding of this study agrees with a report from the Narok District Education Office (2008), that some schools in Narok have class sizes going up to between 80-100 students. Similarly a report by UNESCO (2006) shows that there are over 50 students per class in secondary schools in Kenya. Overcrowding does not only result into students' discomfort but also compromises the indoor air quality, discipline, teacher-students interactions and overall atmosphere in such classes. An ideal classroom should be spacious to allow free movement, space where students can form round table discussions (Ministry of Education, 2008).

Dierk (2002) claimed that providing safe, healthy, and environmentally sound educational institutions for children has proven difficult due to overcrowding and inadequate facilities in most schools. Overcrowded and inadequate facilities are associated with poor planning. This could be caused by inadequate funding from the parents and the government.

4.6.5 Perception on Adequacy of Sanitation Facilities

Teachers and students were further required to indicate their level of agreement with various aspects of the adequacy of sanitation facilities in their schools. Table 14 and 15 indicates the respondents' perception on the adequacy of sanitation facilities.

Table 14: Teachers Perception on Adequacy of Sanitation Facilities

<i>N=65</i>					
Statement	SD	D	N	\boldsymbol{A}	SA
	%	%	%	%	%

Boarding school has adequate bathrooms	34.2	39.7	1.0	14.1	11.0
Schools has adequate toilets for all students	26.7	38.8	1.1	21.7	11.7
Sufficient water available for hygienic sanitation	44.3	35.8	0.0	10.2	9.7
Mean of means	35.1	38.1	0.7	15.3	10.8

The findings from Table 14 reveal that 73.9% of the teachers reported that their schools had no adequate bathrooms for all students.

On the same note, 65.5% of the teachers agreed that their schools had no adequate toilets for all students and teachers. The results also indicate that there was no enough water to maintain a high level of hygiene in sanitation facilities as presented by 80.1% of the respondents.

Students Perception on Adequacy of Sanitation Facilities

Students were also required to indicate their level of agreement with various aspects of the adequacy of sanitation facilities in their schools. Table 15 indicates the students' perception on the adequacy of sanitation facilities.

Table 15: Students Perception on Adequacy of Sanitation Facilities

N=102					
Statement	SD	D	N	\boldsymbol{A}	SA
	%	%	%	%	%
Boarding school has adequate bathrooms for all students					
	32.6	34.9	2.2	19.8	10.5
Adequacy of toilets for all students and teachers	26.8	38.9	1.3	23.2	9.8
Availability of water to maintain sanitation facilities	36.2	37.7	1.6	11.1	13.4
Mean of means	31.9	37.2	1.7	18.0	11.2

The findings from Table 15 reveal that 67.5% of the students reported that their schools had no adequate bathrooms for all students. In addition over, 65.7% of the respondents agreed that their schools had no adequate toilets for all students and teachers. Further, over 73.9% of the students indicate that there was no enough water to maintain high level of hygiene in sanitation facilities.

The findings from Table 14 and 15 reveals that 73.9% of the teachers and 67.5% of the students respectively reported that their schools had no adequate bathrooms for all students.

On the same note, 65.5% of the teachers and 65.7% agreed that their schools had no adequate toilets for all students and teachers. These findings concur with the findings by SACMEQ, 2001 which observed that schools in Kenya had inadequate and extremely overcrowded sanitation facilities shared by too many learners.

The findings of this study are also in agreement with that of the National Primary School Baseline Study of 1998 which revealed that many schools in Kenya did not have enough toilets for learners. The report noted that inadequate or lack of facilities was embarrassing especially for girls after puberty. Schools where students and teachers encounter inadequate or dilapidated sanitation facilities encounter a lot of distress and agony. This happens in particular to girls and women who lack privacy and personal safety (Njuguna, Chege, Thinguri & Makatiani, 2014).

The result also indicates that there was no enough water to maintain high level of hygiene in sanitation facilities as presented by 80.1% and 73.9% of the teachers and the students respectively. Only in a few schools adequate water supply was available. This means that majority of the schools did not have sufficient water supply and this may be the reason why classrooms were dusty and sanitation facilities were at low level of hygiene. This poses risk of spreading communicable diseases, asthma and other illness. The findings from this study identified sanitation facilities in schools in Narok as inadequate resulting in low level hygiene.

UNICEF (2002), noted that water being not just for drinking, its scarcity contributes to illness through bad hygiene and this in turn fosters the spread of infections that affect the eyes, skin and the intestinal tract. Njuguna, Chege, Thinguri and Makatiani (2014) considered good sanitation at school as a situation where every student should have ready access to a convenient and well maintained facility for the safe disposal of human waste and suitable means to effectively wash hands with soap.

At the school level the Kenya Schools Safety and Standards Manual (SSMSK, 2008) delineates the school indicators to safe- guard the students' right to clean water and sanitation. According to the manual all sanitary facilities should be in the best state of repair, serviceable and should be inspected regularly. Soap and water should be set outside the toilets for washing hands after use of these facilities. However the findings of this study are

evidence that most schools did not implement the recommendation in the manual on the provision of clean, well ventilated and properly maintained school physical facilities. Interventional measures are needed in this facility area. Dierk (2002), observed that healthy and environmentally sound educational institutions are lacking in Kenya due to inadequate facilities.

He also pointed that many schools did not have running water, while some had no access to water at all. The Ministry of Education Science and Technology (2005), pointed out that inadequate infrastructural provision, among others, as major challenges that faced education particularly in ASAL. Another report on Child Friendly School from the Ministry of Education (2010) indicated that schools still continue to experience many challenges relating to overcrowded classrooms and inadequacy of sanitation facilities.

4.7 Influence of Planning of School Physical Facilities

The fourth objective of this study was to determine the influence of planning of school physical facilities on the provision of quality learning environment in secondary schools in Narok North Sub County. The information on this item was collected through questionnaires for teachers and interview schedules for administrators.

4.7.1 Teachers Perception on Planning of School Facilities

Teachers from the respective schools responded to a 5 point Likert scale, indicating their level of agreement or disagreement. Table 16 presents their results.

Table 16: Teachers Perception on Planning of School Facilities

N=67					
Statement	SD	D	$oldsymbol{U}$	A	SA
	%	%	%	%	%
Teachers are involved in the planning of school buildings					
	13.2	19.8	25.1	24.6	12.6
The school physical facilities affect my health negatively					
	22.2	34.7	6.0	22.8	7.8
Proper maintenance and repair of school buildings is a					
priority and is regular in my school.	9.0	18.0	10.2	43.1	14.4
Walls, roofs, floors, windows, doors have been repaired	0.4	- 0	2.0	40.4	2 (0
in the last one year	8.4	7.8	3.0	49.1	26.9
Am happy with general structures of school buildings in	100	21.5	0.4	22.5	10.0
my school	13.2	21.6	8.4	33.5	19.2
Classes and in my school movide a fewership/inspiration					
Classrooms in my school provide a favorable/inspiration	6.0	16.0	0.4	<i>5</i> 1 <i>5</i>	12.2
setting for learning	6.0	16.2	8.4	51.5	13.2

Mean of means	11.6	20.0	9.9	37.0	16.6
Quality of learning environment positively influences student academic performance	9.0	22.2	7.8	34.7	22.2

The result on Table 16 indicates that only 37.2% of the respondents agreed that teachers were involved in the planning and designing of school buildings. This implies that majority of schools do not involve teachers in planning of school buildings.

Teachers in schools with a dilapidated building with leaking roofs, worn out floors and shattered windows develop negative attitude towards the school and are likely to become desperate and frustrated. This is likely to affect their work output (Mohammad, 2012). School building physical conditions therefore has a direct positive or negative effect on teachers' morale, sense of personal safety, feelings of effectiveness in the classrooms, and on the other aspects of their morale. Schools where teachers are involved in the process of planning of school physical facilities, have a sense of belonging, commitment and belief that the administration cares about them and what goes in the buildings (BEST, 2001).

The findings further indicated that more than 56% of the respondents reported that the current physical facilities do not negatively affect their health. Also more than 50% responded that they were happy with the general structures of buildings in their schools. The findings also revealed that 57.5% of the respondents agreed that proper maintenance and repair of the school physical facilities was a priority. On the same note 76% indicated that the walls, roofs, floors, windows, doors had been repaired in the last one year. This shows that physical facilities were regularly repaired but may be not on the entire building or if done it was not done properly. This is supported by the previous results on Table 7 where 67% of the respondents indicated that the floors were not well maintained and had potholes.

According to Schools Safety and Standards Manual (SSMSK, 2008) school facilities need to be repaired, maintained and serviced from time to time in order to enhance their safety. Schools, whose buildings are not well maintained, look dilapidated and unhygienic, giving a negative impression about the management and mission of the school. A good proxy measure of the quality of facility management is the condition of the school buildings. Maintenance enhances performance and durability as well as reduces of wastage. According to Asiyai (2012), maintenance of educational facilities is one of the most neglected tasks in many institutions with far reaching effects.

Finally, 56.9% of the respondents agreed that quality of learning environment influences student academic performance positively. These disagree with the study by McGowen (2007) which found that student achievement was not statistically significantly related to school facility conditions.

However the findings were in agreement with studies by Earthman (2004) and Edwards (1992), on student academic achievement and building condition that concluded that the quality of the physical environment significantly affects student academic achievement.

A study conducted in the US context found that educational building conditions hampered student performance, and estimated that improved facilities could lead to a 5.5% to 11% improvement in student performance as measured by standardized tests (Edwards, 2008). In another study of school building design and student learning, Cash (1993) found that comfort factors appeared to have more effect on student achievement than did structural factors. High achievement was associated with schools that were air conditioned, enjoyed less noisy external environments, had less graffiti, and where classroom furniture and student lockers were in good repair.

In Kenya studies by Berner (1993), Munda and Tanui (2010) and Kaberia (2010), indicated a close relationship between the school physical environment and the academic performance of students. For instance, Munda, and Tanui (2010) established that there was a significant positive relationship between students' academic performance and availability of adequate classrooms among other facilities in schools in Bugoma District. A study by Gatabu (2011) on whether school based factors influenced students' academic performance revealed that lack of adequate and appropriate physical facilities negatively affected students' performance. Study by Schneider (2004), claimed that a quality learning environment provided by a physical facility is the one that adequately supports the desired educational programme, and enables the development of learning environment that supports the teaching and learning process.

4.7.2 Perception of Administrators on Influence of Planning

Interview schedules for administrators were used to collect information on this item. The respondents used open ended items covering planning and quality of educational physical facilities. Table 17 indicates the administrators' perception on planning and quality of educational physical facilities.

Table 17:
The Administrators' Perception on Planning and Quality of school Physical Facilities

Responses	%
No enforcement mechanism in school buildings construction.	53.8
Parent Teacher Association not guided in planning of school buildings	61.5
No inspection of school buildings by the government	53.8
Classrooms provide favourable settings for teaching and learning	69.2
The quality of learning environment is a factor of all aspects of proper	53.8
planning.	

The result on Table 17 indicates that over 53% of the Administrators were for the opinion that there was no enforcement mechanism in construction of school buildings in Narok North District. Lack of proper enforcement of government provided guidelines may lead to poorly planned buildings, being erected without proper approval from the relevant bodies. The findings conform with those by Nyakundi (2012) which concluded that few secondary schools in Kenya had a school development plans and very few schools had approved plans.

Majority of 61.5% of the respondents indicated that PTA was not properly guided in planning and construction of school buildings. This indicated that the roles of planning of school facilities in Narok were left to parents with little or no knowledge on existing government policies and without government supervision. This could be the reasons why most of the schools are poorly planned. Lack of government involvement in construction of school buildings is an indication of ignorance of existing policies, lack of commitment and advisory services from educational officers which prevent execution and implementation of policies to enhance building quality school physical facilities.

Further, 53.8% of the respondents revealed that the Ministry of education did not conduct regular inspections of school physical facilities to recommend for improvement.

It is through Directorate of Quality Assurance and Standards Officers (DQASO) supervision and advisory service, that the Ministry of Education Science and Technology (MOEST) is expected to ensure quality assurance and standards of education in Kenya. DQASO are expected to enhance education quality by among other things ensuring that schools have the basic and vital educational facilities. According to School Safety Manual Ministry of Education (2008), the educational officials especially the DQASO have been given authority to monitor and inspect safety situations and well being of physical facilities in schools. The policies require that school physical facilities to be inspected at least once a year. However, despite the massive investment in QASO and change of supervision approach since 2003, cases of students burning in poorly constructed dormitories, students getting severe injuries arising from unsafe school environment, embezzlement of school funds and poor performance have been on the rise (Republic of Kenya, 2012).

A study by Njuguna, Chege, Thinguri and Makatiani, (2014), revealed that though occasional QASO school visits in Kajiado County were made, inadequacy of educational facilities, lack of maintenance and neglect of school facilities, were rampant. The study further observed that most schools drinking water was salty and unsafe for human consumption while sanitary facilities were appalling and gender insensitive. They also pointed that teachers, parents and support staff attributed the dilapidated state of school facilities to both school administration and QASOs failure in their designated roles.

The findings by Fisher (2004) observed that many schools in developing countries were poorly planned, designed and constructed with facilities that were badly laid out, unhygienic, uncomfortable, inaccessible, dangerous and generally not conducive to effective teaching and learning. The report further claimed that schools with poor quality physical facilities were often brought about not by a lack of resources but inappropriate standards, a lack of proper planning and poor understanding of the links between infrastructure provision and education delivery.

Through an open ended question principals were requested to indicate the proposal they would make for improvement of quality of school physical facilities in their schools. Among the recommendation given by the school administrators was to ensure doors open to the outside, to remove grills from the windows, ensure that classes has enough ventilation, not overcrowded, have high standard of hygiene in the school, additional of sanitation facilities,

fixing of ceilings in the classrooms and expansion of libraries among others.

The head teacher should be in a position to ensure that all factors within the school that make the school environment favourable for teaching-learning process be put in place to ensure quality standards are maintained. The Education Act of 1968 stipulates that the head teacher is responsible for overall management, control and maintenance of standards in the schools and is accountable for all that happens in the school. He is charged with the duty of planning, organizing, staffing, coordinating, reporting and budgeting (Okumbe, 2001). The findings of this study indicated that schools in Narok North had reasonably enough ventilations, but the classes were overcrowded, low level of hygiene, lack of ceilings in classrooms and inadequate sanitation facilities. This is an indication of lack of proper policy enforcement mechanism.

The findings are in line with Lackney and Chang (1992) who observed that studying of school building conditions and facility adequacy provides unique opportunities to understand why improving them may influence learning outcomes, thus providing evidence on the relationship between conditions of school buildings and learning outcomes. Education officers are therefore supposed to make a follow up to ensure that schools have adhered to the recommendations by school manual by ministry of education. Directorate of Quality Assurance and Standards should ensure regular inspections; make follow up meetings, offer support and advice to school managers in relation to best practices that will ensure planning for quality school facilities (Ministry of Education, 2008).

However 69.2% of the administrators were for the opinion that classrooms in their schools provided a favorable setting for teaching and learning but also recommended for further improvement of the classrooms especially the ones constructed through Constituency Development Funds (CDF).

The findings also show that 53.8% agreed that planning of school physical facilities influenced the quality of learning environment to a great extent. In order for an educational facility to be successful in meeting the needs of learners, proper process of planning, designing and construction must be followed (Higgins et al, 2005). Schools with physical facilities that are poorly planned, designed and constructed are unhygienic, uncomfortable, and generally not conducive for effective teaching and learning (Fisher 2004).

4.7.3 Students' and Teachers Perception on Construction Materials

The respondents were further required to specify the building materials used in construction of walls, floors and roofs of classroom and sanitation facilities in their schools. The respondents indicated the building materials used in constructions of their classroom walls. The results were as showed on Table 18.

Table 18: Construction Materials for Classroom Wall

N=157

Material	f	Percentage	
Stones	155	98.7	
Earth/mud	1	0.6	
Iron sheets	1	0.6	
Total	157	100.0	

Majority (98.7%) of the respondents indicated that their classroom walls were made of stone. This means most of the classes were of permanent nature. A small percentage of respondents (0.6%) indicated that their classrooms were made of mud and iron sheets respectively.

Respondents were further required to indicate the construction materials for their sanitation facilities walls. The findings are as presented in Table 19.

Table 19: Construction Material for Sanitation Facilities Wall N=156

Material	f	Percentage	
Stone	123	78.8	
Wood	4	2.6	
Earth/mud	3	1.9	
Iron sheets	26	16.7	
Total	156	100.0	

Form table 19, majority of the respondents indicated that the walls of the sanitation facilities were made of stone as represented by 78.8% of the respondents who participated in the study. However 16.7% of the respondents indicated that some sanitation facilities had their walls made of iron sheets and the rest of mud. The study further sought to establish the construction materials used in construction of classroom floor. The findings are as presented in Table 20.

Table 20:

Construction Material for Classroom Floor

N=157

Material	f	Percentage	
Concrete	145	92.4	
Earthen Floor	9	5.7	
Tiles	3	1.9	
Total	157	100.0	

Majority (92.4%) of the respondents indicated that their classroom floors were made of concrete. Very few classroom floors are earthen floor as indicated by 5.7% of the respondents. The findings indicate that schools in Narok have complied with the requirement by the Ministry of Education (2008) that school to ensure that floors to be cemented for ease of cleaning and maintenance.

Recommendations by Ministry of Education circular on Health and Safety Standards in Educational Institutions (2001), the classroom floors should be level and kept clean always. For cemented floors, any cracks should be repaired in good time. Similarly, for mud walls and floors—teachers should ensure that they are regularly smeared with fresh mud and with cow dung to prevent the development of cracks and the generation of dust that can pose risks to the health of both teachers and learners. In all cases, efforts should be made to cement all the classroom floors for ease of maintenance and cleaning.

The study further sought to establish the construction materials for sanitation facilities floor in their institutions. The findings are as presented in Table 21.

Table 21:

Construction Materials for Sanitation Facilities Floor

N=156

Material	f	Percentage	
Concrete	145	93.0	
Earthen Floor	10	6.4	
Tiles	1	0.6	

Total 156 100.0

Source: Field Data 2014

Table 21 shows that 93.0% of the respondents indicated that the floors were made of concrete, 6.4% made of earth and only 0.6 % of the respondents indicated that their floor were made of tiles.

Respondents were further required to indicate the construction materials for their classroom roofs. The findings are as presented in Table 22.

Table 22:
Construction Materials for Classroom Roof
N=162

1, 10=			
Material	f	Percentage	
Thatched	1	0.6	
Iron sheets	158	97.5	
Bricks	3	1.9	
Total	162	100.0	

Source: Field Data 2014

Majority (97.5%) of them indicated that their classroom roofs were made of iron sheets. Classroom roof made of iron sheets and without ceiling make it difficult to teach during rainy season and uncomfortable to teach during hot afternoons. Noise from the rain with no sound proof ceiling is a big problem and may decrease teaching time, forcing teachers to continuously pause or make it difficult for the students and the teacher to hear one another.

A small percentage at 1.9% indicates that their classrooms were made of bricks. There was no classroom roof which was thatched as presented by 0.6%. Only 1.9 % indicated that the classroom roofs were made of bricks.

Respondents were further required to indicate the construction materials for the sanitation facilities roof. The findings are as presented in Table 23.

Table 23:

Construction Materials for Sanitation Facilities Roof

Material	f	Percentage

Thatched	1	0.6	
Iron sheets	159	98.8	
Bricks	1	0.6	
Total	161	100.0	

Majority (98.8%) of the respondents indicated that their sanitation facilities' roofs were made of iron sheets. A very small percentage at 0.6 % and 6.7% indicated that roofs were made of thatch and bricks respectively. This means most of the sanitation facilities are made of iron sheets.

From the results, the research findings indicated that school physical facilities were constructed using different materials. The findings revealed that schools in Narok have an imbalanced provision of educational physical facilities. The study also observed that some schools had structures constructed using different materials varying in quality from temporary, semi permanent in nature. Use of low quality construction materials seems to be the major cause of fast deterioration of most of buildings (Njuguna, Chege, Thinguri & Makatiani, 2014). Buildings in state of disrepair pose a major safety risk to students and other school members.

QASO should investigate the issue of use of substandard construction materials by enlisting an expert who will check the material used against the documented procured materials. The quality of material that is selected determines quality of the building.

Cheap materials are not always economical; on the other hand, expensive materials are not always of good quality. A balance should be achieved; one that fits the budget and does not take excessive erection time. School buildings and equipment should be constructed of durable materials that need not be necessarily expensive.

Building materials, system components, and structural features should be chosen with consideration given to ease of maintenance (Keep, 2002). It is therefore suffices to conclude that teachers and students in Narok North Sub County are exposed to different learning environments. These differences in condition of school physical facilities is likely to influence the quality of learning environment, student learning behavior and in turn impact on academic performance.

4.8 Correlations between planning for physical facilities, adequacy of physical facilities and quality of learning environment

The Pearson's Correlation Coefficient (r) was used to find out whether there was a significant relationship between relationship among planning for physical facilities, adequacy of physical facilities and quality of learning environment.

Planning of physical facilities

Data on planning for physical facilities was generated using a set of 8 statements in the teachers' questionnaire. The responses of the participants to each statement were awarded a score using a 5 point Likert type scale. The planning for physical facilities index for the 8 statements was then computed. The means and standard deviations of the statements are shown in Table 24.

Table 24: Planning of physical facilities

Statement n = 67	Mean	SD
Teachers are involved in the planning of school buildings	1.86	0.85
The school physical facilities affect my health negatively	2.69	0.93
Proper maintenance and repair of school buildings is a priority and is regular in my school.	2.47	1.08
Walls, roofs, floors, windows, doors have been repaired	3.43	1.04
I Am happy with general structures of school buildings	2.26	0.86
Am happy with general structures of school buildings	2.56	1.02
Classrooms in my school provide an inspiration setting for learning	3.00	1.28
Quality of learning environment positively influences student academic performance	3.71	1.43
Planning for physical facilities index 2.70		0.70

The results on Table 24 show that the item mean scores ranged between 1.86 (SD = 0.85) to 3.71 (SD = 1.43) out of a maximum of 5. An examination of the item means reveal that all of them were low except that on quality of learning environment positively influences student academic performance (M = 3.71, SD = 1.43) which was considered average. The planning for physical facilities index (M = 2.70, SD = 0.70) was also relatively low given that it was out of a maximum of 5. The low item mean and index is an indicator that teachers are of the view that planning for physical facilities is not done well.

Adequacy of school Physical Facilities

Data on adequacy of school physical facilities was generated using a set of 7 statements in the teachers' questionnaire. The responses of the participants to each statement were awarded a score using a 5 point Likert type scale. The adequacy of school physical facilities index for the 7 statements was then computed. The means and standard deviations of the statements are shown in Table 25.

Table 25:
Adequacy of School Physical Facilities

Statement n = 67	Mean	SD
The school has adequate/enough classrooms	2.61	1.34
Classrooms have adequate learning space for movement	2.33	1.16
Classrooms are NOT overcrowded	2.24	1.03
Classroom has enough furniture for all students and teachers	2.30	1.24
The school has adequate bathrooms for all students	2.06	0.87
The school has adequate toilets for all students and teachers	1.91	0.95
There is always enough water for maintenance of hygiene in sanitation facilities	1.63	0.81
Adequacy of physical facilities index	2.08	0.80

The results on Table 25 show that the item mean scores ranged between 1.63 (SD = 0.81) to 2.61 (SD = 1.34) out of a maximum of 5. An examination of the item means reveal that all of them were low. The adequacy of school physical facilities index (M = 2.08, SD = 0.80) was also relatively low given that it was out of a maximum of 5. The low item mean and index is an indicator that teachers are of the view that there are inadequate physical facilities in secondary schools Narok North.

The Quality of Learning Environment

Data on Quality of learning environment was generated using a set of 14 statements in the teachers' questionnaire. The responses of the participants to each statement were awarded a score using a 5 point Likert type scale. The Quality of learning eenvironment index for the 14 statements was then computed. The means and standard deviations of the statements are shown in Table 26.

Table 26:
The Quality of Learning Environment

Statement n = 66	Mean	SD
The classroom has adequate lighting all the time	2.76	1.21
The classroom well ventilated to provide adequate circulation of clean air	3.32	1.25
The classroom temperature is comfortable throughout the day	2.33	1.07
Floors of the classrooms are well maintained without potholes and dust	2.15	1.28
The classroom has a sound proof ceiling which is comfortable to teach in during rainy season	2.09	1.13
The classroom roof do not leak during rainy season	2.97	1.36
Classroom has NO noise during the rains	1.85	0.94
There is no noise from surrounding environment that disrupts learning	3.09	1.26
Building materials are of permanent nature	3.27	1.51
Generally, the classrooms provide quality learning environment	2.88	1.14
The toilets and bathrooms are safe for use by all students	2.29	1.02
The sanitation facilities have adequate lighting	2.57	1.20
The sanitation facilities have well ventilation	1.97	1.01
Sanitation facilities provide high level of hygiene	2.06	0.87
Quality of learning environment index	2.46	0.80

The results on Table 26 show that the item mean scores ranged between 1.85 (SD = 0.94) to 3.32 (SD = 1.25) out of a maximum of 5. An examination of the item means reveal that all of them were low except the classroom was well ventilated to provide adequate circulation of clean air (M = 3.32, SD = 1.25) which was considered average. The quality of learning environment index (M = 2.46, SD = 0.80) was also relatively low given that it was out of a maximum of 5. The low item mean and index is an indicator that teachers are of the view that physical facilities did not provide quality learning environment in secondary schools Narok North.

Pearson's Correlation Coefficient (r)

The relationship among the three variables; planning for physical facilities, adequacy of physical facilities and quality of learning environment was established by correlating the indices (overall mean scores) of the three constructs using the Pearsons correlations.

The indices of planning for physical facilities, adequacy of physical facilities and quality of learning environment were 2.70 (SD = 0.70), 2.08 (SD = 0.80) and 2.46 (SD = 0.80) respectively. The results of the bivariate test are in Table 27

Table 27:

Correlations between planning for physical facilities, adequacy of physical facilities and quality of learning environment

Scale		Quality of learning environment	Adequacy of physical facilities
Adequacy of physical facilities	Pearson Correlation coefficient r	.763*	
	p-value	.000	
	N	65	
Planning for physical facilities	Pearson Correlation coefficient r	023	.179
	p-value	.894	.302
	N	65	65

Significant at 0.05

The results of the Pearsons correlations test in Table 27 reveal that the relationship between adequacy of physical facilities and quality of learning environment was positive and statistically significant at the 0.05 level, r(63) = .763, $\rho < 0.05$. However, the results reveal that the relationship between adequacy of physical facilities and planning for physical facilities was positive and not statistically significant at the 0.05 level, r(63) = .179, $\rho > 0.05$. The results further show that relationship between planning for physical facilities and quality of learning environment was negative and not significant at the 0.05 level, r(63) = -.023, $\rho > 0.05$. The results of the test reveal that adequacy of physical facilities influences quality of learning environment, however planning for physical facilities do not.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusions and recommendations of the major findings of the study, based on the research objectives which sought to establish the influence of planning of physical facilities on the provision of quality learning environment provided by secondary schools in Narok North Sub County, Narok County, Kenya.

5.2 Summary of the Major Findings

The following were the major findings of the study:

5.2.1 Use of Government Guidelines during Construction

Although a majority of the administrators were aware of government provided guidelines on the construction of school physical facilities, many of these were constructed without reference to these guidelines. The study found that the government enforcement mechanisms were not in existence. There was no government follow up or issue of certificates of occupation once the facilities were completed.

5.2.2 Quality of School Physical Facilities

On the quality of the classrooms provided, from the perspective of the teachers, the study found that the classrooms had good quality lighting, and ventilations to provide a high indoor air quality, while other aspects of the classroom did not meet the standard for inspirational setting for learning. For example, most schools had corrugated iron sheets without ceilings. This caused a lot of noise during the rainy seasons, as well as affecting thermal quality by making classrooms hot in the afternoons during the dry seasons. A further findings indicated that floors were potholed and dusty, an indication of poor maintenance of classroom floors.

The student respondents on this item concurred with the most of the perceptions of their teachers, however they disagreed with the perceptions of their teachers that classrooms did not provide inspirational setting for learning.

5.2.3 Perception on Quality of Sanitation Facilities

On the quality of the sanitation facilities, the study found that all the respondents agreed that these facilities were the most neglected, because they were not properly maintained, had inadequate lighting and ventilations.

5.2.4 Perception on Adequacy of Physical Facilities

On the adequacy of classrooms provided, the study found that a majority of the teacher respondents indicated that schools had inadequate classrooms and furniture. However majority of the students agreed with the teachers that classrooms did not have adequate learning space. On overcrowding, 91.8% of the respondents indicated that classes were overcrowded with 40 students and above while 54% indicated that classrooms had more than 50 students.

On the adequacy of sanitation facilities the study found that schools did not have adequate toilets, bathrooms and water supply while others did not have access to water at all. Thus, lack of water contributed to low level of hygiene in these facilities. Generally the sanitation facilities were found to be inadequate, with low level of hygiene.

5.2.4 Influence of Planning of School Physical Facilities and Quality of Learning Environment

Majority of teacher respondents agreed that they were not involved in planning of school buildings. Most of them indicated that they were happy with general structure and condition of school buildings and felt that classrooms provided favorable setting for learning. Although some of them felt that maintenance and repair of the school physical facilities was a priority, majority (65.7%) of the respondents indicated that the floors were not well maintained and had potholes.

The majority of the administrators observed that there was no enforcement mechanisms in construction of school buildings and no regular inspection of school physical facilities. However 69.2% of the administrators were of the opinion that classrooms in their schools provided a favorable setting for teaching and learning.

5.2.5 Perception on Construction Materials for School Physical Facilities

On construction materials, majority of the respondents observed that most of the schools were constructed using building materials that were permanent in nature. Such construction materials included stones for the walls, iron sheet for roofing and concrete for the floor. However insignificant number of respondents indicated that some schools were constructed using mud, timber and iron sheet for the wall, earthen floor and thatched roof.

5.2.5 Pearson's Correlation Coefficient

The results of the Pearson's correlations test reveal that the relationship between adequacy of physical facilities and quality of learning environment was positive and statistically significant at the 0.05 level, r(63) = .763, $\rho < 0.05$. However, the results reveal that the relationship between adequacy of physical facilities and planning for physical facilities was positive and not statistically significant at the 0.05 level, r(63) = .179, $\rho > 0.05$. The results further show that relationship between planning for physical facilities and quality of learning environment was negative and not significant at the 0.05 level, r(63) = -.023, $\rho > 0.05$. The results of the test reveal that adequacy of physical facilities influences quality of learning environment, however planning for physical facilities do not.

5.3 Conclusions

Based on the findings of the study the following conclusions were made.

- Majority of the schools were built without following any guideline, government enforcement mechanism was not in existence and there was no government follow up and issue of certificate of occupation.
- ii. On the quality of school physical facilities there was differing opinions where teachers indicated that the structures provided did not provide proper quality learning environment, while administrators and students indicated that the facilities were able to provide inspirational setting for learning.

- iii. On the adequacy, the facilities provided were grossly inadequate as there was overcrowding in classes with 91% of the respondents indicating that the classes had more than 40 students which is the recommended class size by the ministry of education, while 54% of this had 50 students and above in a class. Overcrowded classrooms cannot provide a quality learning environment. At the same time inadequate and unhygienic bathrooms and toilets, 80% of which did not have enough water, and this would compromise the quality of the physical facilities.
- iv. The structures that were constructed without use of government guidelines did not provide quality learning environment in the opinion of the teachers and the students as a result of inadequacy of classrooms and sanitation facilities.
- v. The results of the test reveal that adequacy of physical facilities influences quality of learning environment, however planning for physical facilities do not.

5.4 Recommendations of the study

Based on the findings and conclusions of this study the following recommendations were made.

- i. The government to use qualified building constructors and to recruit inspectors to offer guidance to schools during the process of building and construction of school physical facilities to ensure provision of adequate quality learning environment.
- ii. There is need to carry out inspection of school physical facilities during and after construction to ensure compliance with government guidelines. The relevant authorities should ensure that all buildings constructed by school have approved plans so as to reduce instances of illegal buildings in schools.
- iii. Government ensures all schools are connected with water in order to improve hygiene.
- iv. Ensure regular maintenance of classrooms and sanitation facilities.

5.5 Suggestions for Further Research

Arising from this study, the following directions for future research in the education sector are as follows:

- This study focused on secondary schools in Narok North Sub County and therefore, generalizations cannot adequately extend to other the Counties. Future research should therefore focus on all secondary schools in the entire country.
- ii. Other than planning of school physical facilities, studies should be undertaken to determine other aspects of school management in provision of quality learning environment.
- iii. A similar study should be conducted in public primary schools which were not studied to determine influence of planning in provision of quality learning environment at primary school level and higher institutions of learning.
- iv. Research should be conducted on the impact of implementation of Safety Standards and other government provided guidelines on the outcomes and quality of learning.

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The Influence of Planning of Physical Facilities on the Provision of Quality Learning Environments in Secondary Schools in Narok North District, Kenya

Section 1: Government Provided Guideline on Construction of School Physical Facilities

What are	the recommended	class sizes in terms of	f	
I.	Dimensions (in t	erms of length, width	and height)	
II.	Sitting capacity (number of students p	er class)	
Is there is	nspection of school	buildings		
I.	during constructi	on		
II.	after construction	ı		
Before co	onstruction, do you	have building plans?		
Who	approves	school	building	plans
Governm	nent Issue certificat	e of approval after co	Dompletion of construction	oes th on?
				the role of buildings
local	authority in	n construction	of school	bullulligs

Section 2: Planning and Quality of Educational Physical Facilities

1. In your own view, do you think school buildings in Narok are well pla	anned?
Explain.	
a. If yes, who are involved in planning of school placed facilities?	nysical
b. Who is supposed to design the school structures?	
c. To what extent are the education officers involved in planning the physical facilities?	school
d. To what extent are the parents involved in planning the school placed facilities?	nysical
2. What is the role of school management board in the construction production	cess of
school facilities?	
3. Is there any process followed when planning for school physical fac Explain.	ilities?
4. To what extent does planning of school physical facilities influence the of learning environment teaching in secondary schools?5.	quality
5. Does quality of learning environment influence student academic performant If yes, how?	ce?

Does t	the ministry of education conduct an inspection of physical facilities in your
school	?
If yes	
a.	When was last inspection done in your school?
b.	What was the recommendation and have they given any report on the same?
	
6. a)	.What is the general condition of classroom structures in secondary schools in
N	arok North District?
b	Are you happy with general structure of classrooms in your schools?
c.	Do you think classrooms provided in your school provide a favorable setting
	for learning?
7. W	/hat proposals would you make for improvement of quality of educational
pl	hysical facilities in Narok North District?
_	
_	

Thank you for your participation!

APPENDIX B: Questionnaire for Teachers

The Influence of Planning of Physical Facilities on the Provision of Quality Learning Environments in Secondary Schools in Narok North District, Kenya

Dear Respondent,

I am a Master of Education student from Egerton University conducting a research on the above topic. This questionnaire is an endeavor towards obtaining information for the completion of this research. The data collected will be strictly used for academic purposes only and with utmost confidentiality. Please participate by responding to the questions candidly and sincerely. Your cooperation will be highly appreciated. Kindly, DO NOT write your name or that of your school anywhere on this questionnaire.

Section 1: School Data

School classification: please tick $()$ one	Public School (Private School ()	
School social set up: Please tick $()$ one	Boys Only ()	Girls Only ()Mixed	(
)			

Section 2: Quality and Adequacy of Educational Physical Facilities

The statements below highlight a number of factors about the quality and adequacy of educational physical facilities in your school. Please tick appropriately $(\sqrt{})$ the extent to which you agree or disagree with the statement in the cells.

A. School Classroom

() (()	()
() (()	()
() (()	()
	() () ()	

	well maintained without potholes and dust	()	()	(()	()
5.	The classroom has a sound proof ceiling which is comfortable to teach in during rainy season	()	()	(()	()
6.	The classroom roof do not leak during rainy season	()	()	(()	()
7.	Classroom has NO noise during the rains	()	()	(()	()
8.	There is no noise from surrounding environment that disrupts learning	()	()	(()	()
9.	Building materials are of permanent nature	()	()	(()	()
10.	. Generally, the classrooms provide quality learning	()	()	(()	()
	environment environment	()	())	()	()
Percep	1 .	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Percep	environment	8e 'V	Disagree	Not Sure		Strongly Agree
1.	The school has adequate/enough classrooms Classrooms have adequate learning space for movement and can facilitate group	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. 2. 3.	The school has adequate/enough classrooms Classrooms have adequate learning space for movement and can facilitate group discussions.	Strongly Disagree	Disagree (()	Agree	Strongly Agree

B. Sanitation Facilities (Toilets, Bathrooms)

Perception on Quality of sanitation facilities	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. The toilets and bathrooms are safe			·		
for use by all students	()	()	()	()	()
2. The sanitation facilities have					
adequate lighting	()	()	()	()	()
3. The sanitation facilities have well					
ventilation	()	()	()	()	()
4. Sanitation facilities provide high					
level of hygiene	()	()	()	()	()
Perception on Adequacy of sanitation facilities	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
facilities	Strongly Disagree) Disagree	Not Sure	Agree	Strongly Agree
facilities 1. The school has adequate	()	<u> </u>	_ ' '	A	
facilities 1. The school has adequate bathrooms for all students	()	<u> </u>	_ ' '	A	
facilities 1. The school has adequate bathrooms for all students 2. The school has adequate toilets	()	()	()	()	()
facilities 1. The school has adequate bathrooms for all students 2. The school has adequate toilets for all students and teachers	()	()	()	()	()

Section 3: Planning of School Physical Facilities and Quality Learning Environment

		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1)	Teachers are involved in the planning and designing of school buildings in our school	()	()	()	()	()
2)	The current physical facilities (classrooms, toilets etc) affect negatively my health	()	()	()	()	()
3)	Proper maintenance and repair of the school physical facilities is a priority and is regular in my school	()	()	()	()	()
4)	At least one of the following has been repaired in the last one year in classrooms or sanitation	、 /	` '			,
	facilities: Wall, Roof, Floor, Windows, Doors	()	()	()	()	()
5)	Classrooms provide quality and adequate storage space for students and teachers materials	()	()	()	()	()
6)	Am happy with general structures of school buildings in my school	()	()	()	()	()
7)	Classrooms provided in my school provide a favorable/inspiration setting					
8)	for learning Quality of learning environment influence POSITIVELY on student	()	()	()	()	()
	academic performance	()	()	()	()	()

9)	Ple	ease specify the building m	aterials used in	construction of class	room and sanitation
	fac	rilities.			
	a)	Classroom wall	Stones ()	Wood () Earth	mud () Iron sheet
		()			
	b)	Sanitation facilities' wall	Stones ()	Wood () Earth	mud () Iron sheet
		()			
	c)	Classroom floor	Concrete ()	Earthen floor ()	Tiles ()
	d)	Sanitation facilities' floor	Concrete ()	Earthen floor ()	Tiles ()
	e)	Classroom Roof	Thatched ()	Iron Sheets ()	Bricks ()
	f)	Sanitation facilities roof	Thatched ()	Iron Sheets ()	Bricks ()
10)	Th	e average number of stude	nts in my class	is	
	Be	low 20 () 20-30	() 30-40	() 40-50()	
	Ab	ove 50 ()			
11)		hat facility improvement nool?	nay be needed	to enhance quality of	classrooms in your
12)		hat proposals would you ysical facilities in your sch	•	ovement of quality of	f other educational

Thank you for your participation!

APPENDIX C: Questionnaire for Students

The Influence of Planning of Physical Facilities on the Provision of Quality Learning Environments in Secondary Schools in Narok North District, Kenya

Dear Respondent,

I am a Master of Education student from Egerton University conducting a research on the above topic. This questionnaire is an endeavor towards obtaining information for the completion of this research. The data collected will be strictly used for academic purposes only and with utmost confidentiality. Please participate by responding to the questions candidly and sincerely. Your cooperation will be highly appreciated. Kindly, DO NOT write your name or that of your school anywhere on this questionnaire.

Section 1: School Data

School classification: please tick ($\sqrt{}$) one Public School () Private School () **School social set up:** Please tick ($\sqrt{}$) one Boys Only () Girls Only () Mixed ()

Section 2: Quality and Adequacy of Educational Physical Facilities

The statements below highlight a number of factors about the quality and adequacy of educational physical facilities in your school. Please tick appropriately $(\sqrt{})$ the extent to which you agree or disagree with the statement in the cells.

A. School Classroom

Perception on Quality of Classroom	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. The classroom has adequate lighting all the time	()	()	(()	()
2. The classroom is well ventilated to provide adequate circulation of clean air	()	()	()	()	()
3. The classroom temperature is comfortable throughout the day4. Floors of the classrooms are well	()	()	()	()	()

	maintained without potholes and dust	()	()	()	()	()
5.	The classroom has a sound proof					
	ceiling which is comfortable to					
	teach in during rainy season	()	()	()	()	()
6.	The classroom roof do not leak					
	during rainy season	()	()	()	()	()
7.	Classroom has NO noise during the					
	rains	()	()	()	()	()
8.	There is no noise from surrounding					
	environment that disrupts learning	()	()	()	()	()
9.	Building materials are of permanent					
	nature	()	()	()	()	()
10	. Generally, the classrooms provide					
					/ \	()
	quality learning environment	()	()	()	()	()
	ption on Adequacy	Strongly Disagree	Disagree (Not Sure (Agree	Strongly Agree
Perce _l	The school has adequate/enough	Strongly Disagree	Disagree	Not Sure		Strongly Agree
1.	The school has adequate/enough classrooms		Disagree (Strongly Agree
1.	The school has adequate/enough	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	The school has adequate/enough classrooms Classrooms have adequate learning	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	The school has adequate/enough classrooms Classrooms have adequate learning space for movement and can	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	The school has adequate/enough classrooms Classrooms have adequate learning space for movement and can facilitate group discussions.	Strongly Disagree	Disagree (Not Sure	Agree	Strongly Agree
1. 2. 3.	The school has adequate/enough classrooms Classrooms have adequate learning space for movement and can facilitate group discussions. Classrooms are NOT overcrowded	Strongly Disagree	Disagree (Not Sure	Agree	Strongly Agree

Sanitation Facilities (Toilets, Bathrooms)

Perception on Quality of sanitation facilities	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1. The toilets and bathrooms are safe for use by all students	()	()	()	()	()
2. The sanitation facilities have adequate lighting	()	()	()	()	()
3. The sanitation facilities have well ventilation	()	()	()	()	()
4. Sanitation facilities provide high level of hygiene	()	()	()	()	()
7.0	` /	` /	()	()	()
Perception on Adequacy of sanitation facilities	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
Perception on Adequacy of sanitation					Strongly Agree
Perception on Adequacy of sanitation facilities 1. The school has adequate	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree

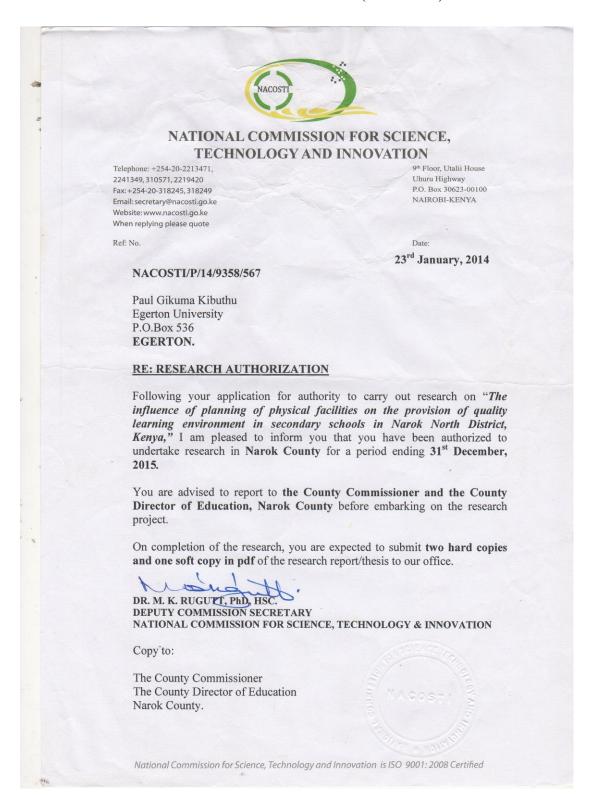
Section 3: Planning of School Physical Facilities and Quality Learning Environment

		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1)	Teachers are involved in the planning and designing of school buildings in our school	()	()	()	()	()
2)	The current physical facilities (classrooms, toilets etc) affect NEGATIVELY my health	()	()	()	()	()
3)	Proper maintenance and repair of the school physical facilities is a priority and is regular in my school	()	()	()	()	()
4)	At least one of the following has been repaired in the last one year in classrooms or sanitation	、 /	` '			, ,
	facilities: Wall, Roof, Floor, Windows, Doors	()	()	()	()	()
5)	Classrooms provide quality and adequate storage space for students and teachers materials	()	()	()	()	()
6)	Am happy with general structures of school buildings in my school	()	()	()	()	()
7)	Classrooms provided in my school provide a favorable/inspiration setting					
8)	for learning Quality of learning environment influence POSITIVELY on student	()	()	()	()	()
	academic performance	()	()	()	()	()

9)	Ple	Please specify the building materials used in construction of classroom and sanitation				
	fac	facilities.				
	a)	Classroom wall Stones () Wood ()	Earth/mud ()Iron sheet ()		
	b)	Sanitation facilities' wall	Stones () W	ood ()Earth/mud ()		
		Iron sheet ()				
	c)	Classroom floor	Concrete ()	Earthen floor () Tiles ()		
	d)	Sanitation facilities' floor	Concrete ()	Earthen floor () Tiles ()		
	e)	Classroom Roof	Thatched ()	Iron Sheets () Bricks ()		
	f)	Sanitation facilities roof	Thatched ()	Iron Sheets () Bricks ()		
10) The average number of students in my class is						
	Be	low 20 () 20-30 ()	30-40 ()	40-50 () Above 50 ()		
11)	Wł	nat facility improvement n	nay be needed	to enhance quality of classrooms in your		
ĺ		nool?	•	1 3		
Wh	at p	proposals would you make	for improvement	nt of quality of other educational physical		
faci	ilitie	es in your school?				

Thank you for your participation!

APPENDIX D: RESEARCH AUTHORIZATION(NACOSTI)



APPENDIX E: RESEARCH PERMIT

THIS IS TO CERTIFY THAT:

MR. PAUL GIKUMA KIBUTHU

of EGERTON UNIVERSITY, 653-20117

naivasha,has been permitted to conduct
research in Narok County Commission for Science

on the topic: THE INFLUENCE OF
PLANNING OF PHYSICAL FACILITIES ON
THE PROVISION OF QUALITY LEARNING
ENVIRONMENT IN SECONDARY SCHOOLS
IN NAROK NORTH DISTRICT, KENYA

for the period ending: 31st December, 2015

sion for the period of the same single for the same services and in the same services and in the same services and in the same services are same services are same services are same services and in the same services are same services are same services are same services and in the same services are same services ar

Permit No: NACOSTI/P/14/9358/567
Date Of Issue: 23rd January,2014
Fee Recieved: Kshs khs1000.00



National Commission for Science,

CONDITIONS

- 1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research, Failure to do that may lead to the cancellation of your permit
- 2. Government Officers will not be interviewed
- 3. No questionnaire will be used unless it has been commapproved.ce. Technology and Innovation National Commission to
- 4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
- 5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
- 6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice the sale.



National Commission for Science, Inc. Technology and Innovation

RESEARCH CLEARANCE
novation National Commission for Science, Jechnovation National PERMIT or Science, Technovation National PERMIT or Science, Technology

n National Commission for Scient National Commission in Second

CONDITIONS: see back page

APPENDIX F: RESEARCH AUTHORIZATION(NAROK COUNTY COPY)



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420 Fax: +254-20-318245, 318249 Email: secretary@nacosti.go.ke Website: www.nacosti.go.ke When replying please quote

Ref: No.

OPEICE MISCY OF MITY

03 MAR 201) RECEINER P.O. BOX 4 - 20000 MARCO 9th Floor, Utalii House Uhuru Highway P.O. Box 30623-00100 NAIROBI-KENYA

Date:

23rd January, 2014

NACOSTI/P/14/9358/567

Paul Gikuma Kibuthu Egerton University P.O.Box 536 EGERTON.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "The influence of planning of physical facilities on the provision of quality learning environment in secondary schools in Narok North District, Kenya," I am pleased to inform you that you have been authorized to undertake research in Narok County for a period ending 31st December,

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

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.

DEPUTY COMMISSION SECRETARY NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Copy to:

The County Commissioner
The County Director of Education
Narok County.

COUNTY COMMISSIONER'S OFFICE NAROK COUNTY

0 0 MAR 2017

P.O. BOX4 - 20500, NAROK