SCHOOL-BASED FACTORS INFLUENCING THE IMPLEMENTATION OF FIRE SAFETY STANDARDS IN PUBLIC SECONDARY SCHOOLS IN KENYENYA DISTRICT, KISII COUNTY

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DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

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DEDICATION

I dedicate this work to my wife Janet Kerubo, my daughter Sharon Kwamboka and my two sons Geoffrey Momanyi and Davis Marube.

ACKNOWLEDGEMENT

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ABBREVIATIONS AND ACRONYMS

BOG   Board of Governors

BOM   Board of Management

CWS   Church World Service

DQASOs   District Quality Assurance and Standards Officers

EFA   Education For All

HODs   Heads of Departments

HSAC   Health and Safety Advisory Committee

MC   Management Committee

MDGs   Millennium Development Goals

MOE   Ministry Of Education

MOES&T   Ministry Of Education, Science and

                 Technology

NACOSTI   National Commission for Science, Technology

                 and Innovation

NFPA   National Fire Protection Association

PTA   Parents Teachers Association

QASOs   Quality Assurance and Standards Officers

SEDEP II   Secondary Development Programme II

U.K   United Kingdom

UNESCO   United Nations Educational, Scientific and

                 Cultural Organization

USA   United States of America

ABSTRACT

School safety is an important aspect in the provision of quality education. School fires affect the provision of quality education. Cases of fires in Kenyan schools have been increasing with frequency and severity inspite of the published Fire Safety Standards Manual for Schools in Kenya (2008) which serves as a blueprint for enhancing the safety of all schools in the Republic. Each school Board of Management was to form a subcommittee on school safety which has the direct responsibility of overseeing school safety. The purpose of this study was to investigate the school-based factors influencing the implementation of fire safety standards in Public Secondary Schools in Kenyenya District, Kisii County, Kenya. The objectives of the study were to determine how financial resources, fire safety training, inspection by QASOs, and fire safety planning influence the implementation of fire safety standards in schools. The study adopted a descriptive survey design to explore how the above school-based factors influence the implementation of fire safety standards in schools. To achieve the above objectives the study used a sample of twenty five (25) public secondary schools. Their stratified sample sizes comprised of 20 day schools and 5 boarding schools. Respondents were 25 principals, 25 deputy principals, 175 HODs and the DQASO. Data was collected through questionnaires, interview guide and observation checklist. Validity of research instruments was determined by conducting a pilot study before the actual study. Reliability of instruments was determined by use of test-retest method. Data was quantified using descriptive statistics like frequencies and percentages and findings presented in charts, tables and graphs. Thematic analysis was used to analyze qualitative data. A regression analysis revealed that there exist a positive relationship between the implementation of fire safety standards and the school based factors namely financial resource, training, inspection and planning. The study thus concluded that school financial resources, training of school stakeholders, frequency of school fire safety by QASOs and school fire safety planning influence implementation of fire safety standards in schools. Based on the study findings and analysis and conclusions, the study recommends that schools should diversify and source for more funds for fire safety management. Again the study recommends the government and other stakeholders provide adequate funding for fire safety management. The study also recommends training of all stakeholders on fire safety for a sound proactive response to fire tragedies. Teachers and support staff should be trained how to handle fire safety equipment, initiate emergency evacuations and protect students in the event of fire by the fire and rescue department. The researcher recommends that the Ministry of Education should employ more QASOs, train and equip them as to enhance their school fire safety inspection functions to enforce compliance to fire safety standards in schools. Finally the study recommends the formulation of fire safety plans as they increase accurate response to fire. The study suggests further study to be done on the influence of community based factors, school leadership style, and challenges facing the implementation of fire safety standards in schools.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

School safety is an important aspect in the provision of quality education. School fires affect the provision of quality education. According to Ramachandran & Charters (2011), fires have been a major threat to property and life throughout the history of civilization. Keeping students safe is a school's top priority. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 1987), affirm that the wellbeing of children in school is the concern of everyone since they spend a significant proportion of their time at school. It is thus imperative to address fire safety in schools.

The earliest recorded fire prevention efforts come from ancient Rome after a major fire outbreak (Brannigan & Carter, 1998). However, even then, the response was still reactive and not proactive. Many countries have developed strategies to address and implement school safety. In April 1996 the Washington Department of the Health formed the Washington State Facilities Health and Safety Advisory Committee (HSAC) which developed the guide and related documents for good health and safety practices to help ensure safety in schools (State Department of Health, USA, 2003). In April 19th 2010, the United Nations launched a world-wide campaign to ensure the safety of one million schools and hospitals. It emphasized that schools and other public infrastructure meet health and safety standards through public awareness and mobilization of resources (United Nations, 2010).

In the United Kingdom (U.K), the legislative control over fire safety was rationalized in 2006 with the introduction of the Regulatory Reform (fire safety) Order of 2005. The Order spells out in detail the responsibilities of those charged with managing fire safety within organizations (Furness & Muckett, 2007). Netherlands school safety related work focuses on the safety of the premises, school capacity building, bullying and improved incidence response (Soomeren, 2002). In Trinidad and Tobago, the Ministry of Education has one of its major goals the provision of a safe and secure learning environment for all the children of the nation. The Education Act section 27 (a) gives the principals the responsibility for supervision of the personal safety of the pupils as well as the school plant and that the school administration shall ensure that qualified personnel conduct a safety emergency disaster procedure review at least annually (MOE Trinidad and Tobago, 2005).

In India, the Kumbhakonam fire tragedy in 2004 was a starting point for many school safety initiatives. The Haryana state government Policy on "Safety Measures in Government and Private Aided & Un-aided Schools" seeks to achieve the right of children to free and compulsory education in a safe and secure school environment (Haryana Government Education Department (n.d). In the proposed Secondary Development Programme II (SEDEP II) 2010-2014, the Ministry of Education and Vocational Training of the United Republic of Tanzania emphasized on school health and safety in secondary schools through improvement in infrastructure standards and alleviating the pressure on overcrowding schools (United Republic of Tanzania, 2010). This

enhances safety and reduces the number of casualties in the event of fire outbreak.

In Kenya, the Ministry of Education issued Circular No: G9/1/169 of 10th April 2001 (Republic of Kenya, 2001); published the Ministry of Education Safety Standards Manual for Schools in Kenya which serves as a blueprint for enhancing the safety of all schools in the Republic (Ministry of Education, 2008) and wrote "MOE Directorate of Quality Assurance & Standards Letter Ref No MOE HQS/3/13/2 dated 30th November, 2012 which Particularly provide fire safety guidelines on its part 8.0 "Fire Prevention and Emergencies" (Ministry of Education, 2012). The Basic Education Act, 2013 No. 14 of 2013 requires the Management Committee (MC) of preprimary institution to provide a secure physical and psychosocial setting for the children while the Board of Management (BOM) is to provide for the welfare and observe the human rights and ensure safety of the pupils, teachers and non-teaching staff at the institution (Republic of Kenya, 2013). Fire tragedies can be reduced with strict adherence to these regulations.

In this study, school based factors are the independent variables while implementation of fire safety standards is the dependent variable. Implementation of fire safety standards is influenced by school financial resources, training of school stakeholders, inspection by QASOs, and planning for fire safety. This is illustrated in Figure 2.1. Availability of school financial resources and its proper utilization enhances the building of new school infrastructure that complies with the building regulations and fire safety

standards. In New Zealand, the sprinkler system is the ultimate form of property protection. However its initial outlay is costly. It is often given a lower priority than it should have, due to expense concerns and ignorance of the benefits of such a system (Carter, 1999). In a US study (Hall, 1996) it was found that sprinklers reduced the average fire loss by 67%. Again in the US, Shelton, Owens, & Song (2009) found that of the various safety measures assessed, 95% of schools indicated the presence of fire alarms. Fire extinguishers and fire sprinklers were documented in 86% and 54% of the schools, respectively. Studies by Omolo & Simatwa (2010) and Kirui, Mbugwa & Sang (2011), agree that school financial resources influence the effective implementation of fire safety standards.

Training of key school stakeholders is also crucial for the effective implementation of fire safety standards in schools. Stroud, Stallings and Korbusieski (2007) study observed that nearly 60% of principals had low knowledge in science laboratory safety. In such situations, school principals would fail to implement laboratory safety to the letter hence compromising students' safety. Fire safety training increases the level of fire safety knowledge and, the accuracy of response to a fire (Huseyin & Satyen, 2006). This could lead to a reduction in the rate of fire casualties. Kahwa (2009), emphasize the importance of capacity building to law enforcers to enforce compliance to fire safety standards in schools in Tanzania. In Kenya, Gichuru (2013), Nderitu (2009), and Onderi & Makori (2013) decried the low level of training among stakeholders and thus compromising the effective implementation of fire safety standards in schools.

On inspection, Kahwa (2009) study in Tanzania, established that only 11.7% of the schools surveyed had been inspected and that none of the secondary schools had fire safety certificate. In Kenya, studies by Rugut (2003) and Nderitu (2009) found out that the QASOs were ineffective in their job and did not disseminate new policies of MOE for they were overwhelmed by the large and increasing number of schools. Besides inspection, fire safety plans are important as they increase the level of readiness in case of a fire disaster (White, 2011). This is affirmed by Nakitto and Lett (2012) who found out that 84 % of schools in Uganda had no fire safety plans. In Kenya, Wanaina (2012) recommended for proper planning for the enhancement of safety, convenience and mobility.

Implementation is the process of putting a decision or plan into effect. It is the stage of policy-making between the establishment of a policy and the consequences of the policy for the people whom it affects. Fire safety standards' implementation is critical for the achievement of the objective the fire safety standards in Kenyan schools. It is only possible if factors influencing it are identified and addressed. Nationally, at St. Kizito, 19 girls died and many were raped in 1991 (Ndirangu, 1991), 25 died at Bombululu girls in 1998 (Desert News, 1998) as they were crushed in the stampede as they tried to escape through the two narrow doors and the wooden roof collapsed on them, 68 died at Kyanguli in 2001 (Odalo, 2001) while at Asumbi Boarding Primary School 8 girls died in August 2012 (Nation

Correspondent, 2012) as the dormitory was locked from the outside, the windows covered with grill and wire mesh, preventing them from escaping.

School fires lead to heavy loss of lives as students and staff are killed; serious injuries; heavy loss of property- resources and facilities; disruption and loss of instructional time to mention just a few. School fires are a nightmare for parents who can hardly sleep because of the fear of bad news from schools. Such heavy losses are largely due to none implementation of the fire safety standards provided in the Ministry of Education Circular No: G9/1/169 of 10th April 2001 (Republic of Kenya, 2001); Safety Standards Manual for Schools in Kenya (Ministry of Education, 2008) and MOE Directorate of Quality Assurance & Standards Letter Ref No MOE HQS/3/13/2 dated 30th November, 2012 (Ministry of Education, 2012). The increasing cases of school fires raise serious concerns on the implementation of the fire safety standards. It is in the light of this that the researcher undertook this study to establish the school based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District which if addressed will lead to full implementation of the fire safety standards thereby drastically reduce the occurrence of such fires.

Nyakundi (2012) in a study of the "implementation of safety standards and guidelines in public secondary schools in Marani District" and Gichuru (2013) in a study "Fire disaster preparedness strategies in secondary schools in Nyeri Central District" recommended that further study should be extended to other districts to enhance generalizability of the findings to validate them as cases of fire disasters are on the rise in Kenya. Nyakundi (2012) contend that lack of

finance is the main cause of failure in the levels of implementing safety standards for schools while Gichuru (2013) found out that most schools are not prepared in fire disaster management because emergency plans for fire disaster in schools are at most average. This study sought to investigate school-based factors that influence the implementation of fire safety standards in secondary schools in Kenyenya District, Kisii County: Availability of school financial resources; fire safety training for school stakeholders; the frequency of school fire safety inspection by the QASOs, and planning for fire safety. Kenyenya District was chosen for the study because no study on fire safety had been done yet cases of school fires were on the increase as explained in the statement of the problem (Nyagesiba, 2014 & Kenya Forum, 2011).

1.2 Statement of the problem

Cases of school fires have been on the rise in Kenya. Kenyenya district has not been spared either. The latest incident was that of Kenyenya secondary school in which unknown arsonists torched a boy's dormitory in the school on Friday the 16[th]of May 2014. Kisii County Governor James Ongwae and Bomachoge Borabu MP Joel Onyancha speaking at the school, asked police to investigate arson cases in schools and bring to book the culprits. They said frequent fires in school dormitories require a solution (Nyagesiba, 2014).

On 21st March 2011, a dormitory was torched at Magena. Nothing was salvaged from the dormitory housing 37 students. Luckily, nobody was injured since the students were in class studying. It was the tenth dormitory to be

burnt down at the school (Kenya Forum, 2011). The fire was suspected to have been caused by an electric fault or arson. According to the DEO's office Kenyenya, there was an arson attack at Igorera in 2011 and that in 2014, school fires occurred at Riokindo Girls, Mokubo, and Nyakoiba. At Riokindo Girls, a chemistry practical lesson left 7 students with injuries 2 of them sustaining serious burns after a lamp blew when carrying out an experiment. At Nyakoiba, a transformer and electrical appliances brew at night leaving 12 students with injuries as they fled for safety while at Mokubo electronic devices were burnt in the staff room due to an electrical faulty. Such heavy losses are largely due to none implementation of the fire safety standards. The increasing cases of school fires raise serious concerns on the implementation of the fire safety standards. It is in the light of this that the researcher undertook this study to establish the school based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District which if addressed will lead to full implementation of the fire safety standards thereby drastically reduce the occurrence of such fires.

1.3 Purpose of the study

The purpose of the study was to investigate the school-based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County, Kenya.

1.4 Objectives of the study

The objectives of the study were

i)   To determine how school financial resources influence implementation of fire safety standards in public secondary schools in Kenyenya District;

ii) To establish how fire safety training for school stakeholders influence the implementation of fire safety standards in public secondary schools in Kenyenya District;

iii) To examine how school fire safety inspection by the QASOs influences the implementation of fire safety standards in public secondary schools in Kenyenya District; and

iv) To assess how planning for fire safety influences the implementation of fire safety standards in public secondary schools in Kenyenya District.

1.5 Research questions

This research sought to answer the following questions:

i)   To what extent do school financial resources influence the implementation of fire safety standards in schools?

ii) How does training of school stakeholders on fire safety influence the implementation of fire safety standards in secondary schools?

iii) To what extent does the frequency of school fire safety inspection by the QASOs influence the implementation of fire safety standards in school?

iv) How does planning for fire safety influence implementation of fire safety standards?

1.6 Significance of the study

The study findings may assist the District Education Board in Kenyenya District to enforce compliance to the fire safety standards in schools. Information obtained from the research analysis may help policy makers to formulate policies that will promote school fire safety to ensure safe and secure environment conducive for teaching and learning thereby improving the quality of education. As well, the study may provide the MOES&T with useful information on the implementation of fire safety standards for Schools aimed at improving teaching and learning thereby reducing the loss of life and property through fires.

1.7 Limitations of the study

Limitations are aspect of research that may negatively affect the results of a study but which the researcher has no control (Mugenda & Mugenda, 2003). Some head teachers feared that information provided might be used to punish them. The researcher however assured them that this was only for academic research.

1.8 Delimitations of the study

The study was confined to a specific geographical and administrative unit which is Kenyenya District in Kisii County. Only public secondary schools are considered leaving out private secondary schools and schools in the primary sub sector as the researchers' financial resources were inadequate and yet time was a limiting factor. Targeted respondents were 42 head teachers, 42 deputy

head teachers, 294 HODs, and the DQASO who has the responsibility and power to inspect schools and enforce compliance to fire safety standards.

1.9 Assumptions of the study

This study was carried out on the assumption that:

i)   All public secondary schools in Kenyenya District are aware of the fire safety standards for schools in Kenya,

ii) All respondents would cooperate and provide reliable responses, and

iii) All schools have the capacity to implement fire safety standards.

1.10 Definitions of significant terms

The following are the definitions of significant terms as used in the study:

Arson refers to the intentional and illegal burning of property.

Emergency refers to the situation generated by the real or imminent occurrence of fire that requires immediate attention.

Fire refers to the oxidation of a combustible material releasing heat, light, and various reaction products such as carbon dioxide and water.

Fire safety refers to precautions taken to prevent or reduce the likelihood of a fire that may result in death, injury, or property damage, alert those in a structure to the presence of a fire in the event one occurs, better enable those threatened by a fire to survive, or reduce the damage caused by a fire.

Fire safety plan refers to a formal, detailed document often required by law that describes the procedures for preparedness and response to fire

emergencies. It identifies the actions that should be taken by the occupants and building management in the event of a fire or similar emergency situation. These actions identified must be implemented and documented in order to maintain fire protection systems and assist in the prevention of fire on the premises. The fire safety plan therefore covers fire prevention, evacuation and emergency response.

Fire safety standards refer to set guidelines, regulations, requirements and measures on fire safety.

Implementation refers to the execution and adherence of school fire safety standards.

Safety refers to the freedom from unacceptable risk from harm due to fire.

School stakeholders refers to groups of people with roles to play in the running of a school e.g. learners, staff, school board of management (BOM).

Standards refer to set guidelines, regulations, requirements, measures and the level of quality achievement in relation to a school fire safety component.

1.11 Organization of the study

This study is organized into five chapters. The first chapter highlights the background to the study, statement of the problem, the purpose, objectives, research questions, significance, limitations, delimitations, basic assumptions and definitions of the significant terms of the study. Chapter two includes literature review under the sub-topics: Concept of fire safety, influence of

financial resources, training school stakeholders, planning, and frequency of school inspection by QASOs on the implementation of fire safety standards.

The third chapter covers the research methodology employed and discusses research design, area of study, target population, sample size and sampling procedure, research instruments, instrument validity and reliability, data collection procedure and data analysis techniques. Chapter four presents the data analysis and discussion of research findings while the last chapter focuses on the summary of the study, conclusion and recommendations emanating from the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Literature review discusses the concept of fire safety. It also reviews related literature on the influence of school financial resources, training of school stakeholders, frequency of school inspection by QASOs, and fire safety planning on the implementation of fire safety standards in secondary schools.

2.2.1 Concept of fire safety

Fire is defined by Furness & Muckett (2007) as a chemical reaction or series of reactions involving the process of oxidation producing heat, light and smoke. It occurs when the chemical structure of a fuel is broken by heat energy, in the presence of oxygen. This combustion reaction continues in a chain reaction until one of the components- fuel, heat, or oxygen- is no longer sufficient to continue the reaction. Smoke rarely causes a building's total collapse as heat. The majority of fire deaths are due to smoke, either by the inhalation of toxic gases or carbon monoxide poisoning (Stollard & Abrahams, 1999).

The design of structural elements to resist heat is the responsibility of the architect. The objectives of the architect in designing buildings which offer an acceptable level of fire safety are twofold and basically cover both the safety of people and of property (Stollard & Abrahams, 1999). There are five tactics available to the architect seeking to fulfill the objectives of life safety and

property protection: Prevention, Communication, Escape, Containment, and Extinguishment.

2.2.2 Causes and implications of school fires

The major causes of school fires are: arson (Jain, 2010) and Furness & Muckett, 2007); electrical fault/failure or inadequacy of electrical safety devices (Furness & Muckett, 2007); accidental ignition (Furness & Muckett, 2007); failure to comply with any of the general safety or fire specific legislation (Furness & Muckett, 2007); and other human factors like lack of proper training, lack of discipline such as carelessness, boredom, fatigue, negative attitudes and irresponsible social habits such as use of drugs (Jain 2010). Fires are also caused by lightning.

School fires have many implications. They often lead to heavy loss of lives as students and staff are killed; cause serious injuries; heavy loss of property; disruption and loss of instructional time, lowers key assessment results and loss of classroom displays or archived work all of which lead to a drop in educational quality, denies students continuous schooling making them not to catch up and some end up dropping permanently or fail to matriculate and go to further education; school inspection becomes difficult as staff use fire as an excuse for not making as much progress as expected; psychologically fires leaves school communities ill-prepared to deliver psychological first-aid and to recover rapidly due to lack of resiliency development and prior empowerment, make students loss a sense of continuity and their hopes and plans for the future are shattered, causes a drop in staff and student morale,

negative publicity, shock anxiety and trauma among others. In view of this, this study sought to investigate the school-based factors influencing the implementation of fire safety standards.

2.2.3 Fire safety measures

The occurrence of school fires negatively affects education by not only taking a heavy toll on human resources and that of the learners, but also by reducing the available physical facilities hence affecting quality of education offered. It also leads to unnecessary levies to parents. To overcome this challenge, it is imperative that all school stakeholders get to know the fire safety measures. In particular the school safety committee which has the direct responsibility of overseeing school safety must provide the leadership and coordination of the school safety programme which at its core are the safety measures.

The MOE (2012) highlights the following fire and emergency measures: All buildings to adhere to building codes; avoid congestion in buildings; Maintaining proper fire exits and proper exit sign; Placing and maintaining serviced fire extinguishers in easily accessible place; Proper storing/using combustible substances such as petroleum, paints chemicals or hazardous materials such as solvent should be stored in tightly closed containers away from sources of heat. They must never be stored in classrooms or dormitories; Maintaining appropriate fire alarm systems for detection and warning of fire in school buildings; conducting fire drills at regular intervals throughout the year; regular checking of electrical wiring by qualified professionals and replacing any that is weak, broken or worn out; discarding all litter properly as they tend to quickly catch fire; properly regulating the use of hurricane lambs in

dormitories; teachers to sensitize learners about the dangers of fire through the related sections in the curriculum; learners not carry or play with matches; firefighting equipment or its alternatives (sand, water horses etc.) must be installed, strategically positioned and regularly checked if they are functional.

In boarding schools dormitories, the space between the beds should be at least 1.2 metres while the corridor or pathway space should not be less than 2 metres. Since sharing of beds is prohibited in schools, admissions should be tied to bed capacity at all times. All doorways should be wide enough, at least 5 feet wide, and they should open outwards. They must not at any time be locked from outside when learners are inside. Each dormitory should have a door at each end and an additional emergency exit at the middle clearly labeled "Emergency Exit". Dormitory doors should be locked at all times when learners are in class or on the playing fields. The keys to the doors should be kept by the Dormitory Master/Mistress or the Dormitory Prefect. Dormitory windows must be without grills and should be easy to open outwards. Fire extinguishing equipment should be functioning and placed at each exit with fire alarms fitted at easily accessible points. Regular spot checks by the teachers and the administration should be undertaken before learners retire to bed. An accurate roll call should be taken every day and records well maintained. There should be regular patrols by the school security personnel or any other authorized security personnel. No visitor should be allowed in the dormitory. There should be inspection of hygiene standards of the dormitories and the learners on alternate days of the week. Bunk beds

should be strong and firm and fitted with side-grills to protect young learners against falling off (Ministry of Education, 2008).

2.3 The influence of school financial resources on the implementation of fire safety standards

The implementation of school fire safety standards requires enormous financial resources. However, resources are scarce. The education minister directed that all provincial secondary boarding schools be given between Sh. 150,000 and 350,000 each to buy fire-fighting equipment (Kumba, 2008) following increased school fires. District schools seem to have been left out yet school fires have no boundaries. Musimba (2005) and Nyakundi (2012) contend that lack of finance is the main cause of failure in the levels of implementing safety standards for schools. Omolo & Simatwa (2010) argue that implementation of safety policies involves modification of existing buildings; the purchase of expensive safety equipment and fittings and capacity development at all levels. Without adequate funds, all the safety policies may not be implemented at once. Kirui et al (2011) concurs that budgetary allocation by BOG to security issues is below 10% of the total budget. Omolo & Simatwa (2010) study revealed that 86.67% of head teachers decried inadequate funds, 26.67% lack of skills and 6.67% poor coordination from the MOE regarding safety policy.

2.4 Influence of training of school stakeholders on the implementation of fire safety standards

Health and safety training is a key part of the preventive programme. Safety training spells out the rules and provides information on potential hazards and how to avoid them (Armstrong, 2009). Gichuru (2013) contend that most school stakeholders are not trained on fire safety because there has never been a need to train on fire safety and there are no materials to teach with. Nderitu (2009) found that lack of trained personnel in disaster management was a great challenge in schools. According to Huseyin & Satyen (2006), fire safety training increases: (a) the level of fire safety knowledge and, (b) the accuracy of response to a fire. This could lead to a reduction in the rate of fire casualties. Onderi & Makori (2013) study revealed that the BOG and PTA training and support was seriously lacking and that sufficient induction into their roles was lacking. This affects the implementation fire safety standards.

2.5 Influence of the frequency of school inspection by QASOs on implementation of fire safety standards

Health and Safety Inspections should be carried out on a regular and systematic basis by line managers and supervisors with the advice and help of health and safety advisors (Armstrong, 2009). According to the Basic Education Act No.14 of 2013, the Quality Assurance and Standards officers are obliged to facilitate compliance with standards by promoting a collegial and collective approach to quality assurance. They may at any time enter any basic education and training institution with or without notice to ensure compliance with education standards and regulations. They have power to

recommend temporary suspension of operations of the institutions to the County Education Board for a specific period until the basic standards are met and or may make recommendations to the Teachers Service Commission (T.S.C.) and County Education Board (C.E.B.) for necessary action (Republic of Kenya, 2013).

Rugut (2003) found out that QASOs were ineffective in their jobs and did not disseminate new policies of the MOE. This explains why some head teachers felt uncoordinated and without the guidance and support of QASOs, which is necessary for the implementation of safety policies. Nderitu (2009) found out that rarely did MOE officials inspect schools to monitor and supervise implementation of safety policy because QASOs are overwhelmed by the large and increasing number of schools and colleges making it an immense task to inspect school frequently.

2.6 Fire safety planning and implementation of fire safety standards

A fire safety plan describes the procedures for preparedness and response to fire emergencies. It identifies the actions that should be taken by the occupants and building management in the event of a fire or similar emergency situation. These actions identified must be implemented and documented in order to maintain fire protection systems and assist in the prevention of fire on the premises. The Fire Safety Plan therefore covers fire prevention, evacuation and emergency response.

Nakitto & Lett (2012), Gichuru (2013), Wanaina (2012), and Armstrong (2009) attest the importance of fire safety plans. Fire safety plans are

important as they increase the level of preparedness in case of a fire disaster. Nakitto & Lett (2012) found out that 84 % of schools in Uganda had no fire safety plans while Gichuru (2013) found out that most schools are not prepared in fire disaster management because emergency plans for fire disaster in schools are at most average. These schools lack fire alert procedures and do not remind the immediate stakeholders of the emergency plans. Wanaina (2012) recommended for proper planning for the enhancement of safety, convenience and mobility.

2.7 Summary of literature review

The level of compliance with school safety standards has been studied and found to be most wanting by Musimba (2005), Migiro (2012), Wainaina (2012), Kirui et al (2011), Ng'ang'a (2013) and Wanyama (2011). Macharia (2012) only investigated school playground safety. There exists a knowledge gap on fire safety measures as school fires are on the increase in Kenyan secondary schools (Nyakundi, 2012; Gichuru, 2013, Makhanu, 2009 and Migiro, 2012). In particular, Gichuru (2013) contend that most school stakeholders are not trained on fire safety because there has never been a need to train on fire safety and there are no materials to teach with. This study seeks to fill that knowledge gap by investigating the school based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County.

2.8 Theoretical framework

This study is based on Abraham Maslow's Hierarchy of Needs Theory (1954) which advocates for safety and security as fundamental human needs. A

hierarchy of five needs exist: physiological, safety, love, esteem, and self-actualization (Armstrong, 2009). Physiological needs and safety needs are categorized as basic needs whereas love needs, esteem needs and self-actualization needs are categorized as secondary or higher needs. In this hierarchy, once one need is satisfied, another emerges and demands satisfaction (Lunenburg & Ornstein, 2008). This theory formed an important base for the study because it identifies safety needs as being important to the wellbeing of human beings and more importantly to all members of the school. After meeting the physiological needs they require assurance that their security needs will be addressed. It is imperative that educational stakeholders foster safe and secure environments to facilitate learners' enrolment, retention, completion and attainment of quality education.

2.9 Conceptual framework

A conceptual framework is a model of presentation where a researcher conceptualizes or represents the relationship between variables in the study and shows them graphically or diagrammatically (Orodho, 2004). In this study, the inter-relationship between two study variables is conceptualized: the school based factors (independent variables) and the implementation of fire safety standards in schools (dependent variable). Implementation of fire safety standards is conceptualized as an outcome of the school based factors. School fire safety management is an ongoing process to assure all members of the school of continued security and safety. School Safety is an integral and indispensable component of the teaching and learning process. Indeed, no meaningful teaching and learning can take place in an environment that is

unsafe and insecure to both learners and staff. It is, therefore, imperative that educational stakeholders foster safe and secure school environments to facilitate increased learner enrolment, retention and completion and hence attainment and quality education. This is shown in Figure 2.1.

Figure 2.1 *School based factors influencing the implementation of fire safety standards*

School based factors	Fire safety management	
• School financial resources • Training of school stakeholders on fire safety • Frequency of fire safety inspection by QASOs • Planning for fire safety	Fire safety management: • Passive fire safety measures e.g. escape routes & exits • Active fire safety measures e.g. fire detection & alarm systems • Management fire safety measures e.g. fire safety progrmme, Fire safety manager	Implementation of fire safety standards

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers research design, target population, sample size and sampling procedure, data collection instruments, instrument validity and reliability, data collection procedures, and data analysis techniques.

3.2 Research design

This study adopted a descriptive survey research design to investigate the school based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District. According to Kothari (2004), the major purpose of descriptive research is description of the state of affairs as it exists at present. This research design is adopted for the study since it allows for quick data collection at a comparatively cheap cost (Grinnel, 1993). After collecting the raw data, the researcher subjected it to qualitative and quantitative data analysis technique from which findings inferences were made on the school-based factors influencing the implementation of fire safety standards in schools.

3.3 Target population

Target population refers to the population which the researcher wants to generalize results of a study (Mugenda & Mugenda, 2003). All forty two Public secondary schools in Kenyenya District, Kisii County were targeted for

the study.   The target population included: 42 Principals, 42 Deputy Principals, 294 HODs and the DQASO.

3.4 Sample size and sampling procedure

According to Kothari (2004), a sample size should neither be excessively large, nor too small and must fulfill the requirements of efficiency, representativeness, reliability and flexibility. The researcher selected a sample of 25 schools which is 60% of the target population (42) as it is neither excessively large, nor too small and fulfills the requirements of efficiency, representativeness, reliability and flexibility (Kothari, 2004). Again the researcher could not use 20% (9) as suggested by Gay (1987) or 30% (13) as suggested by Mugenda & Mugenda (2003) as these sizes are too small, inefficient and unreliable for this study. This study adopted stratified sampling technique to obtain a representative sample as the population from which a sample was drawn did not constitute a homogeneous group (Kothari, 2004). The population (42) was divided into 7 boarding and 35 day schools arranged according to their respective zones. Proportionate sampling technique was then used to get a representative sample size for each zone and respondent category. A simple random sample was taken from each group. Orodho (2004) observes that simple random sampling technique is a method in which each and every item in the population is given an equal chance of inclusion in the sample. This helped reduce biases or prejudices in selecting samples. Samples were selected as shown in Table 3.1.

Table 3.1 *Sample size*

Zone	No. of sch.	No. of HODs	Day sch.	Boarding schools	Sample size for HODs	Day Sch. sample size	Boarding Sch. sample size
Magenche /Mokubo	11	77	9	2	42	5	1
Nyakoiba	6	42	5	1	28	3	1
Kenyenya	8	56	7	1	35	4	1
Magena/ Emesa	10	70	9	1	42	5	1
Riokindo	7	49	5	2	28	3	1
Total	42	294	35	7	175	20	5

3.5 Research instruments

The research instruments for this study were questionnaires, observation check list and an interview guide. **Questionnaires** for principals, deputies and HODs were used to gather data for they allow for anonymity of respondents and uniformity of question items allowing comparability. They contain general information, school financial resources, training, inspection and fire safety planning. Closed ended questionnaires are easy to analyze, administer, and economic (Mugenda & Mugenda, 2003). **An observation checklist** was used to verify the facilities and equipment in place for fire protection at schools. **The interview guide** was used for the QA&SO. According to Kombo & Tromp (2006) interview guide provide in-depth information about cases of interest to the researcher. This instrument is suitable to the study due to its sensitive nature. Both instruments include the four objectives of the study.

3.5.1 Instrument validity

Validity is the degree to which the research instruments will appropriately and accurately measure what they are supposed to measure (Orodho, 2005). Content validity was used in this study. This is important in the establishment of accuracy and truthfulness of the research instrument. In order to ascertain validity, the instruments were designed and handed to the supervisors in the School of Education, University of Nairobi for analysis and the provision of feedback. The researcher further Piloted the instruments in three (10% of the sample size) purposively sampled public schools not in the study to validate them and to determine their accuracy, clarity and suitability.

3.5.2 Instrument reliability

Piloting was done to establish reliability of the instruments. This was determined by use of test-retest method. Each instrument was first tested in four (4) randomly selected public-schools not in the study sample. A period of two weeks was allowed before the tools were administered again for a retest. Sampled responses from the test and the retest were analyzed using means, frequencies and percentages that produce scores which help check whether the two processes give similar results. The scores were then correlated using Pearson's Product Moment Correlation Coefficient as an estimate of reliability. The coefficient value of r lies between ± 1, the closer the value is to +1, the stronger the congruence. According to Gay (2002), coefficient values between 0.6 and 0.9 determine the instrument reliability. This is shown in Table 3.2.

Table 3.2 *Reliability test*

Instrument items	X	Y	XY	X^2	Y^2
Girls' boarding	9	9	81	81	81
Mixed Day	27	27	729	729	729
School financial resources	35	30	1050	1225	900
Stakeholders' training	35	31	1085	1225	961
Inspection	34	29	986	1156	841
Have plans	2	2	4	4	4
No plans	6	6	36	36	36
Factors in planning	34	32	1088	1156	1024
What to include in fire safety plans	34	28	952	1156	784
	$\sum x=216$	$\sum y=194$	$\sum xy=6011$	$\sum x^2=6768$	$\sum y^2=5360$

$$r = \frac{n\sum xy - \sum x\sum y}{\sqrt{n\sum x2 - \sum(x)2}\sqrt{n\sum y2 - \sum(y)2}}$$

$$n = 9$$

$$r = \frac{9x6011 - 216x194}{\sqrt{9x6768 - 216^2}\sqrt{95360 - 194^2}} = 0.99$$

Where: X =scores from the first test (test); Y =scores from the second test (retest).

The researcher established the coefficient at 0.99. This agrees with Kerlinger (1983) who assert that test-retest reliability of 7.0 and above qualify the

instrument for use in the study. Kerlinger (1983) concurs with Cohen & Manion (1994) and Orodho (2009). The advantage of this co-efficient is that it is easier to calculate and can be used for any data that can be ranked.

3.6 Data collection procedures

Data collection refers to gathering specific information aimed at providing or refuting some facts (Kombo & Tromp, 2006). The researcher sought permission to conduct research in Kenyenya District by obtaining a research permit from the National Commission for Science, Technology and Innovation (NACOSTI), paid a courtesy call to the County Commissioner and the County Director of Education Kisii County, Kenyenya District Commissioner, District Education Officer and the DQA&SO. The researcher visited sampled schools to inform the head teachers about the study, made arrangements and issued questionnaires to all respondents which were filled and collected immediately. An interview with the DQA&SO was held on appointment.

3.7 Data analysis techniques

After collecting the raw data, the researcher subjected it to qualitative and quantitative data analysis technique. Data was first edited and coded. During editing, the questionnaires were scrutinized to check inadequate or irrelevant responses. Descriptive statistics was used to analyze the quantitative data so obtained. The statistics included frequency counts, mean (average) and percentages. For qualitative data, thematic analysis was used to analyze qualitative data by documenting, categorizing, and quantifying data. Data analyzed was presented by use of tables, graphs, and pie charts. The study also

used inferential statistics i.e. linear regression analysis to establish the influence of school based factors (financial resources, fire safety training, fire safety inspection and planning) on implementation of fire safety standards in public secondary schools.

Regression model

$F = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + ei$

Where:

School-based factors (0, 1) - Is the independent variable, 1 is for implementation of fire safety standards and 0 otherwise.

F   -   Implementation of fire safety standards

α_0 -   Is the constant

X_1 -   Financial resources

X_2 -   Fire safety training

X_3 -   Fire safety inspection

X_4 -   Planning for fire safety

$\beta_1, \beta_2, \beta_3, \& \beta_4$ -   Coefficients

ei   -   Is the residual error

Conclusions and recommendations were made based on the findings of the school-based factors influencing the implementation of fire safety standards.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

Chapter four presents data analysis, discussions and interpretations of the qualitative and quantitative data on school based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County. The study sought responses from principals, deputy principals, HODs and the QASO Kenyenya District and through direct observation guided by the study objectives and the research questions.

A sample size of 226 respondents of whom 25 were principals, 25 deputy principals, 175 HODs and the QASO was used. The data was analyzed and the information presented in form of pie charts, bar graphs and tables. The interpretation and presentation of data was guided by the study objectives under the following sub headings:

i) School financial resources

ii) Training of school stakeholders on fire safety

iii) Frequency of fire safety inspection by QASO

iv) Planning for fire safety

4.2 Questionnaire return rate

Questionnaire return rate is the proportion of the questionnaire retuned after they have been administered to the respondents. Of the 225 questionnaires administered the same number were returned making a questionnaire return rate to be 100 percent.

Table 4.1 *Questionnaire return rate*

Category of Respondents	Sampled	Returned	% Return
Principals	25	25	100
Deputy Principals	25	25	100
HODs	175	175	100
Total	225	225	100

According to Table 4.1, all the sampled principals (25) returned dully filled questionnaires making 100 percent return rate. 25 deputy principals sampled also returned dully filled questionnaires making 100 percent return rate. Also 175 sampled HODs returned dully filled questionnaires making 100% return rate. The total questionnaire return rate was 100 percent achieved through the cooperation of and coordination by the principals. The questionnaires were administered filled and collected immediately after being dully filled by the respective respondents. It is from such study responses that the researcher highlights the school-based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County, Kenya.

4.3 General information

The principals, deputy principals and HODs were asked to indicate the type of their school.

Figure 4.1 *School type*
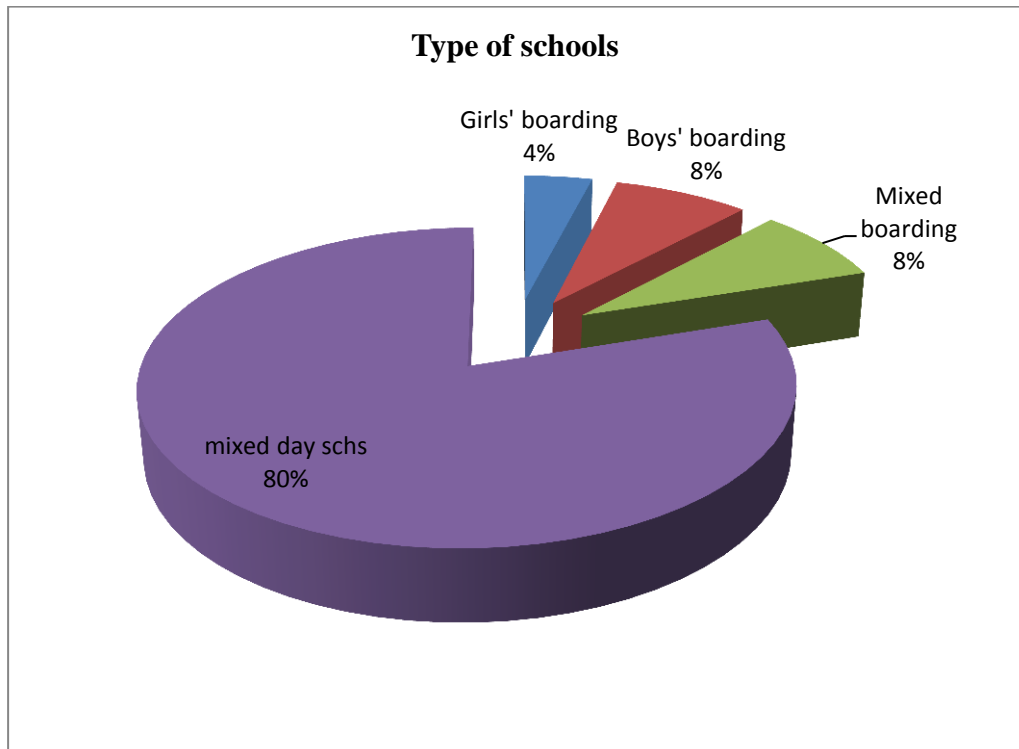
The findings revealed that 2 (8%) were boys' boarding, 1 (4%) was girls' boarding, 2 (8%) were mixed boarding while 20 (80%) were mixed day schools. This is shown in Figure 4.1

4.4.1 School financial resources

The implementation of fire safety standards requires enormous financial resources. However, resources are scarce and thus the need to evaluate its influence on the implementation of fire safety standards. Table 4.2 shows responses on the influence of school financial resources on the implementation of fire safety standards in schools.

Table 4.2 *School financial resources*

Influence	SA		A		U		D		SD	
	F	% Agree	F	%	F	% Undecided	F	% Disagree	F	%
For installation of additional fire safety equipment	143	63.3	73	32.3	3	1.3	7	3.1	0	0
For servicing existing appliances	98	43.4	111	49.1	9	3.98	6	2.7	2	0.9
Modifications of existing buildings	128	56.6	82	36.3	7	3.1	8	3.5	1	0.44
To purchase expensive fire safety fittings and equipment	126	55.8	71	31.4	7	3.1	15	6.64	7	3.1
For capacity development at all levels	88	38.9	108	47.8	17	7.5	13	5.8	0	0
Building new fire safety compliant school infrastructure	112	49.6	89	39.4	12	5.3	12	5.3	1	0.44
Average	116	51.3	90	39.4	9	4.1	10	4.5	1	0.8

Table 4.2 shows that 143 (63.3%) respondents strongly agreed that school financial resources are crucial for installation of additional fire safety equipment and 73 (32.3%) agreed. This constitutes 216 (96%) of those that agreed. 98 (43.4%) respondents strongly agreed and 110 (49.1%) agreed that school financial resources enhance the servicing of existing fire safety appliances this totals up to 208 (92%) of respondents that agreed (n=226). 128 (56.6%) strongly agreed while 82 (36.3%) agreed that school financial resources influence modification of existing buildings to comply with the fire safety standards. Thus an overall 210 (93%) respondents agreed showing a strong relationship. An overall 197 (87%) agreed as 126 (55.8%) strongly agreed and 71 (31.4%) agreed that school financial resources are needed to purchase expensive fire safety fittings and equipment. A total of 196 (87%) respondents agreed that capacity development depends on availability of financial recourses of which 88 (38.9%) respondents at strongly agree and108 (47.8%) agreed. On building of new fire safety compliant school infrastructure, 112 (49.6%) strongly agreed and 89 (39.4%) agreed as being influenced by school financial resources. This make a total of 201(89%).

4.4.2 Overall average responses on the influence of school financial resources on the implementation of fire safety standards

Figure 4.2 shows overall average responses on the influence of school financial resources on the implementation of fire safety standards.

Figure 4.2 *Influence of school financial resources on the implementation of fire safety standards.*

Infuence of school financial resources on implementation of fire safety standards

Category	Value
SD	0.80%
D	4.50%
U	4.10%
A	39.40%
SA	51.30%
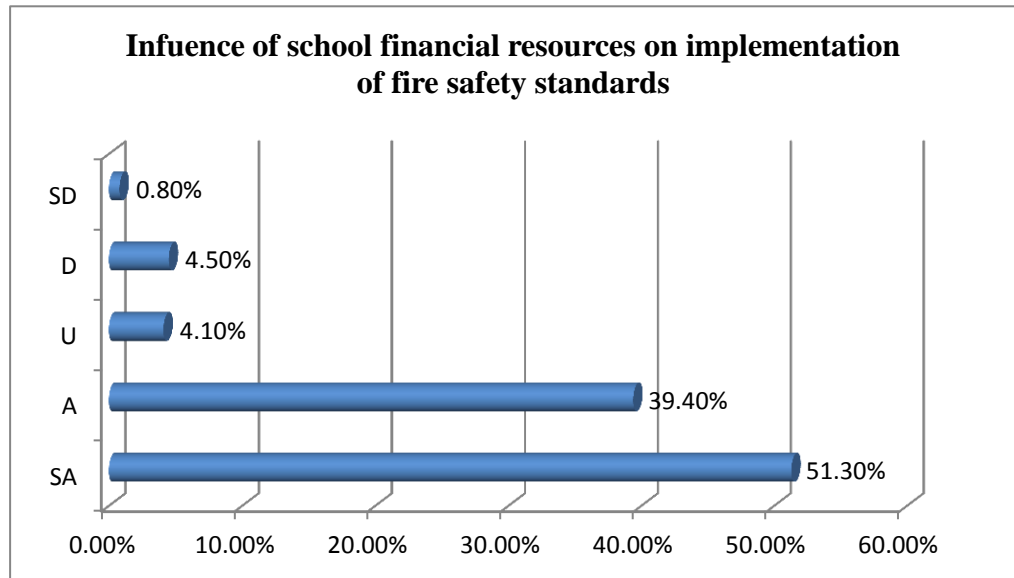
Figure 4.2 shows that an overall average of 116 (51.3%) respondents strongly agreed that school financial resources influence the implementation of fire safety standards. 90 (39.4%) also agreed. This totals up to 206 (91%) of the respondents that generally agreed. The adequacy, effective and efficient utilization of school financial resources enhances implementation while its inadequacy and mismanagement inhibits implementation of fire safety standards. Akali, Khabamba & Muyinga (2009) observed that many public schools run on a shoe-string budget and cannot afford the luxury of fire-fighting equipment. Only a handful of schools have fire extinguishers and first-aid kits in offices, dormitories, libraries, classrooms, laboratories, stores and kitchens, and even these are not regularly serviced. This further explains

why all schools in this study had not installed fire alarms/detectors as shown in Table 4.9.

Lack of finance is the main cause of failure in implementing safety standards for schools (Musimba, 2005 and Nyakundi, 2012). The study findings also concurs with Omolo & Simatwa (2010) who argue that implementation of safety policies involves modification of existing buildings; the purchase of expensive safety equipment and fittings and capacity development at all levels. Kirui et al (2011) concurs that budgetary allocation by BOG to security issues is below 10% of the total budget.

4.4.3 Main sources of school funds for fire safety management

Table 4.3 shows responses on the main sources of school funds for fire safety management.

Table 4.3 *Main sources of school funds for fire safety management*

Source of funds	Frequency n=225	%
PTA levies/school fees	134	59.6
Fundraising/Harambee	135	60
Donors	92	40.9
National government grants and FDSE funds through the MOES&T	119	52.9
NGOs	29	12.9
County Government allocations	22	9.7
School income generating activities	30	13.3
School sponsors	22	9.7

The study findings indicate 135 (60%) respondents indicated fundraising/harambee, 134 (59.6%) PTA levies/school fees, 119 (52.9%)

National government grants and FDSE funds through the MOES&T, 92 (40.9%) donors, 30 (13.3%) school income generating activities, 29 (12.9%) NGOs, 22 (9.7%) County government while 22 (9.7%) respondents indicated school sponsors. This means that there is no single source of funds and thus the need for schools to diversify their sources of funds for a sound fire safety management.

4.5.1 Training of school stakeholders on fire safety

Health and safety training is an integral part of the preventive programme. Safety training spells out rules and provides information on potential hazards and how to avoid them. Table 4.4 illustrates the responses on the influence of training of school stakeholders on the implementation of fire safety standards in schools.

Table 4.4 *Training of school stakeholders on fire safety*

Influence	SA		A		U		D		SD	
	F	%	F	%	F	%	F	%	F	%
	Agree				Undecided		Disagree			
Training is part of the preventive programme	163	72.1	61	27	1	0.4	1	0.4	0	0
Awareness creation on the importance of fire safety	129	57.1	95	42	2	0.9	0	0	0	0
Provide information on fire hazards and their avoidance	125	55.3	95	42	4	1.8	2	0.9	0	0

Equip the personnel with special skills, knowledge to enable them to deal with new aspects of safety	152	67.3	71	31.4	2	0.9	1	0.4	0	0
For the development of safety policies and safety culture	100	44.2	115	51	6	2.7	5	2.2	0	0
Increase the level of fire safety knowledge	116	51.3	107	47.3	3	1.3	0	0	0	0
For accurate response to fire or fire preparedness	119	52.7	104	46	2	0.9	1	0.4	0	0
Induct head teachers, deputy head teachers, support staff and students on their roles in fire safety management	141	62.4	79	35	3	1.3	1	0.4	2	0.9
To impart information on the administration of first aid	119	52.7	102	45.1	4	1.8	0	0	1	0.4
Equip teachers with fire-fighting techniques/prepar edness	118	52.2	97	43	6	2.7	5	2.2	0	0
Fire drills as awareness on fires	98	43.4	105	46.5	16	7.1	6	2.7	1	0.4
Average	125	55.5	94	41.5	5	1.9	2	0.9	0	0.2

Table 4.4, shows that 163 (72.1%) respondents strongly agreed that training is part of the preventive programme, 61 (27%) agreed. 129 (57.1%) strongly agreed and 95 (42%) agreed to the fact that training of school stakeholders

creates awareness on the importance of fire safety in schools. Training provides information on fire hazards and their avoidance. This was strongly agreed to by 125 (55.3%) respondents and 95 (42%) agreed. 152 (67.3%) respondents strongly agreed that training of school stakeholders on fire safety is a process that equips them with special skills, knowledge to enable them deal with new aspects of safety and 71 (31.4%) agreed. Training determines the development of safety policies and a fire safety culture in a school. This was attested to by 100 (44.2%) and 115 (51%) respondents who strongly agreed and agreed respectively. 116 (51.3%) and 104 (47.3%) strongly agreed and agreed respectively that such training increases the level of fire safety knowledge. Through training, head teachers and their deputies, HODs, teachers, support staff and students are inducted on their roles in fire safety management. This was revealed by 141 (62.2%) respondents who strongly agreed and another 79 (35%) who agreed. 119 (52.7%) strongly agreed while 104 (46%) agreed that such induction and training enable all school stakeholders to accurately respond to fire if and when it occurs. Again 118 (52.7%) and 97 (43%) strongly agreed and agreed respectively that this is possible as teachers are equipped with fire- fighting techniques through training. 119 (52.7%) strongly agreed while 102 (45.1%) agreed that the training process imparts information on the administration of first-aid in the event of a fire tragedy. 98 (43.4%) strongly agreed, 105 (46.5%) agreed that training enables teachers to conduct fire drills and simulation as awareness on fires.

4.5.2 Overall average responses on training of school stakeholders on fire safety

Figure 4.3 shows the overall average responses on the influence of training of school stakeholders on fire safety.

Figure 4.3 *Training of school stakeholders*
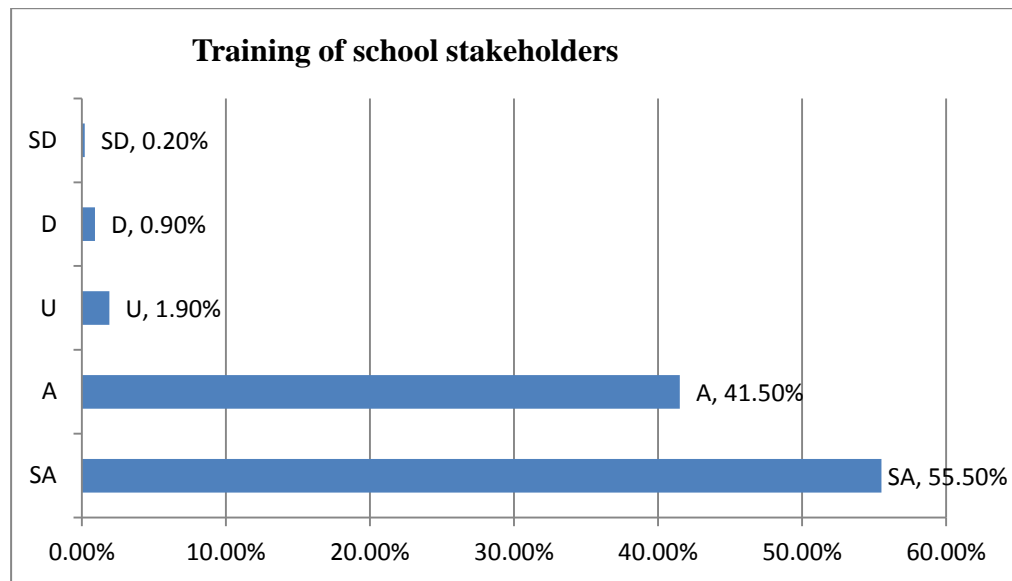
Figure 4.3 reveals that 125 (55.5%) respondents in the study strongly agreed and 94 (41.5%) agreed that training of school stakeholders influences the implementation of fire safety standards. The overall percentage of respondents who generally agreed (Strongly Agree + Agree) is 219 (97%) as shown in Figure 4.3. This high percentage (97%) is interpreted to imply that training of school stakeholders greatly influences implementation of fire safety standards. There is thus an urgent need to do so as most school stakeholders are not trained on fire safety (Gichuru, 2013). This concurs with Nderitu (2009) who found that lack of trained personnel in disaster management was a great challenge in schools. According to Huseyin & Satyen (2006), fire safety training increases the level of fire safety knowledge and, the accuracy of

response to a fire. This also concurs with Proulx (2001) who contends that the amount of previous fire safety training is a major determinant on how an individual can respond to a fire. Other factors include personality and leadership abilities and decision making styles. This could lead to a reduction in the rate of fire casualties. Onderi & Makori (2013) study revealed that the BOG and PTA training and support was seriously lacking and that sufficient induction into their roles was lacking. This affects the implementation fire safety standards.

According to Gathoni (2013), teachers lack training in fire-fighting techniques and lack information on administration of first-aid despite being entrusted with the responsibility of administering the same to their colleagues and students. Kukuli (2009) contends that lack of basics about fire safety issues or on how to respond in the event of fire tragedy is to blame for the large number of casualties experienced. Fire safety drills is an effective and valuable method of providing a means to transfer people's training into practice so that they are able to respond more accurately during a fire.

4.6.1 Frequency of school fire safety inspection by QASOs

According to the Basic Education Act No.14 of 2013, the Quality Assurance and Standards officers are obliged to facilitate compliance with standards by promoting a collegial and collective approach to quality assurance. They may at any time enter any basic education and training institution with or without notice to ensure compliance with education standards and regulations. Table

4.5 shows the responses on the influence of the frequency of school fire safety inspection by QASOs on the implementation of fire safety standards.

Table 4.5 *Frequency of school fire safety inspection by QASOs*

Influence	SA		A		U		D		SD	
	Agree				Undecided		Disagree			
n=226	F	%	F	%	F	%	F	%	F	%
For dissemination of MOEST fire safety standards	104	46.1	102	45.1	12	5.3	7	3.1	1	0.4
Facilitate compliance with fire safety standards	101	44.7	116	53.3	3	1.3	4	1.8	2	0.9
For the coordination, guidance and support of head teachers for the implementation of fire safety standards	112	49.6	104	46	2	0.9	8	3.5	0	0
Assessment of compliance level on fire safety standards	90	39.8	126	55.8	4	1.8	6	2.7	0	0
Recommend temporary suspension of operations of the institution to the County Education Board for a specific period until the basic standards are met	79	35	86	38.1	27	11.9	26	11.5	8	3.5
Average	97	43.1	107	47.7	10	4.24	10	4.25	2	0.96

Table 4.5 shows that 104 (46.1%) respondents strongly agreed and 102 (45.1%) agreed that the frequency of school fire safety inspection by the QA&SOs influence the implementation of fire safety standards. 101 (44.7%) strongly agreed and 116 (53.3%) agreed that such inspection facilitates compliance with fire safety standards. 112 (49.6%), 104 (46%) strongly agreed and agreed respectively that frequent inspection enhances the co-ordination, guidance and support of head teachers for the implementation of fire safety standards. 90 (39.8%) strongly agreed and 126 (55.8%) agreed that such inspection is one way of assessing compliance level on fire safety standards in schools. Finally on this theme, 79 (35%) and 86 (38.1%) strongly agreed and agreed respectively that it is through such inspections that the QA&SOs can recommend temporary suspension of operations of the institution to the County Education Board for a specific period until the basic standards are met.

4.6.2 Overall average responses on the influence of the frequency of inspection by QASOs on the implementation of fire safety standards.

Figure 4.4 shows the overall average responses on the influence of the frequency of inspection by QASOs on the implementation of fire safety standards.

Figure 4.4 *Frequency of inspection by QASOs*
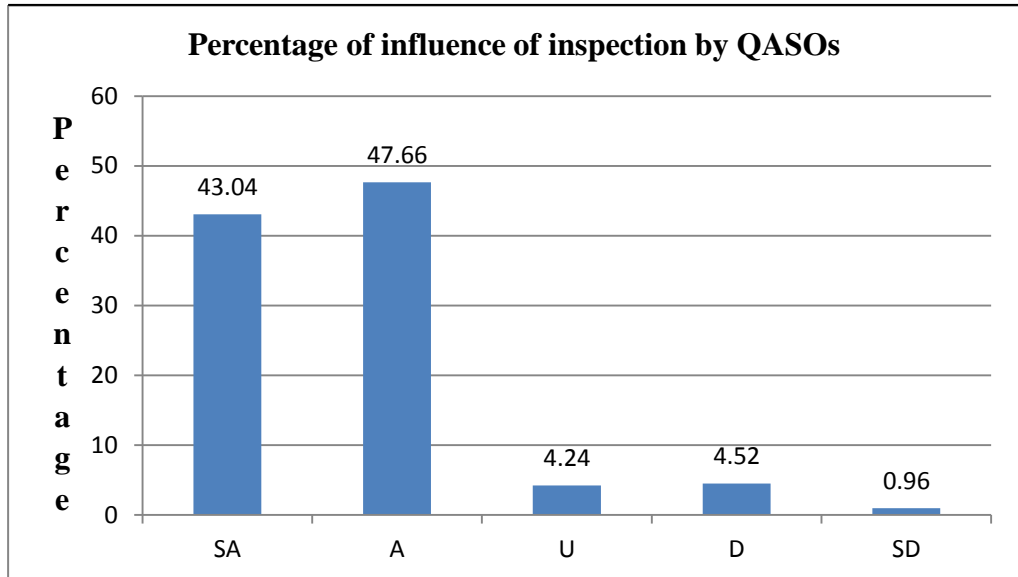
From the study, 97 (43.04%) and 107 (47.66%) respondents strongly agreed and agreed respectively that the frequency of school fire safety inspection by QASOs influence the implementation of fire safety standards. This thus amounts to 204 (91%) respondents that agreed. This is interpreted to mean that the higher the frequency of school fire safety inspection by QASOs, the higher the level of implementation of fire safety standards. This concurs with Omolo & Simatwa (2010) who contend that schools should be inspected at least once in a year. In Tanzania, Kahwa (2009) study established that only 11.7% of the schools surveyed had been inspected and that none of the secondary schools had fire safety certificate.

The findings indicate precisely that school fire safety inspection by the QASOs should not only be intensified but also be supported by the parent ministry and government. This will enable them disseminate MOES&T fire safety standards, facilitate compliance with fire safety standards, coordinate guide and support headteachers in the implementation of the fire safety standards, assess compliance levels on fire safety and also recommend temporary suspension of operations of the institution to the County Education Board (CEB) for a specific period until the basic standards are met. Rugut (2003) found out that QASOs were ineffective in their jobs and did not disseminate new policies of the MOE. This explains why some head teachers felt uncoordinated and without the guidance and support of QASOs, which is necessary for the implementation of safety policies. Nderitu (2009) found out that rarely did MOE officials inspect schools to monitor and supervise implementation of safety policy because QASOs are overwhelmed by the large and increasing number of schools and colleges making it an immense task to inspect school frequently.

4.7 Planning for fire safety

A fire safety plan describes the procedures for preparedness and response to fire emergencies. It identifies the actions that should be taken by the occupants and building management in the event of a fire or similar emergency situation.

4.7.1 Schools that have fire safety plans

Figure 4.5 shows the percentage of schools that have fire safety plans and those that do not.

Figure 4.5 School fire safety plan or fire emergency plan
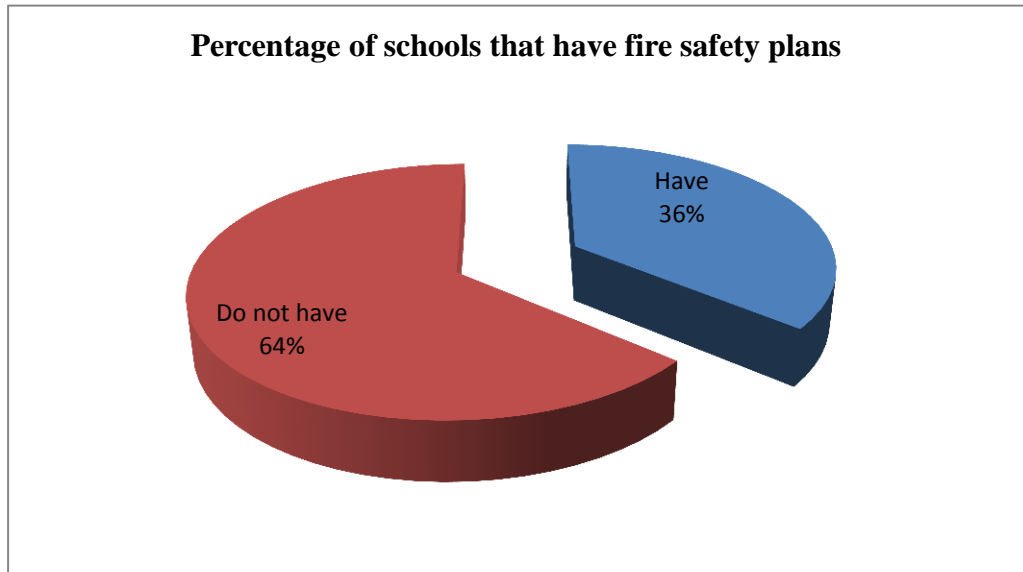
The study revealed that only 18 (36%) respondents indicated that their schools have fire safety plans while 32 (64%) indicated that theirs do not. This finding concurs with Nakitto & Lett (2012) who found out that 84% of schools in Uganda had no fire safety plans in place. This is contrary to White (2011) who highlighted that schools have fire safety plans outlining what should be done in case of a fire disaster. This is interpreted to mean that majority (64%) of schools are not prepared for a proactive response to fire and are thus vulnerable to fires with high casualties, destruction of institutional buildings and contents and loss of instructional time.

4.7.2 Influence of school fire safety planning on implementation of fire safety standards

A fire safety plan describes the procedures for preparedness and response to fire. It identifies the actions that should be taken by the occupants and building management in the event of a fire or similar emergency situation. Table 4.6 illustrates the responses on the influence of planning for fire safety on the implementation of fire safety standards in schools.

Table 4.6 *Planning for fire safety*

Influence	SA		A		U		D		SD	
	Agree				Undecided		Disagree			
n=226	F	%	F	%	F	%	F	%	F	%
To prevent loss of life and injuries	166	73.5	60	26.5	0	0	0	0	0	0
To reduce damage to buildings and contents	132	58.4	91	40.3	2	0.9	1	0.4	0	0
Because the fire code requires it	68	30.1	89	39.4	21	9.3	41	18	3	1.3
To quicken the resumption of normal operations	84	37.2	109	48.2	17	7.5	13	5.8	3	1.3
Average	113	49.8	50	38.6	10	4	4	6	2	0.7

Table 4.6 indicates that 166 (73.5%) of the study respondents strongly agreed while 60 (26.5%) agreed that fire safety planning helps prevent loss of life and injuries. 132 (58.4%) strongly agreed while 91 (40.3%) agreed that such planning helps reduce damage to school buildings and contents. 68 (39.4%) and 89 (39.4%) strongly agreed and agreed respectively with the fact that planning should be done because the code requires so. 84 (37.2%) strongly

agreed, 109 (48.2%) agreed that fire safety planning quickens the resumption of normal school operations after the occurrence of fire.

4.7.3 Overall average responses on the influence of school fire safety planning on the implementation of fire safety standards

Figure 4.6 shows the overall average responses on the influence of school fire safety planning on the implementation of fire safety standards.

Figure 4.6 *Planning for fire safety*
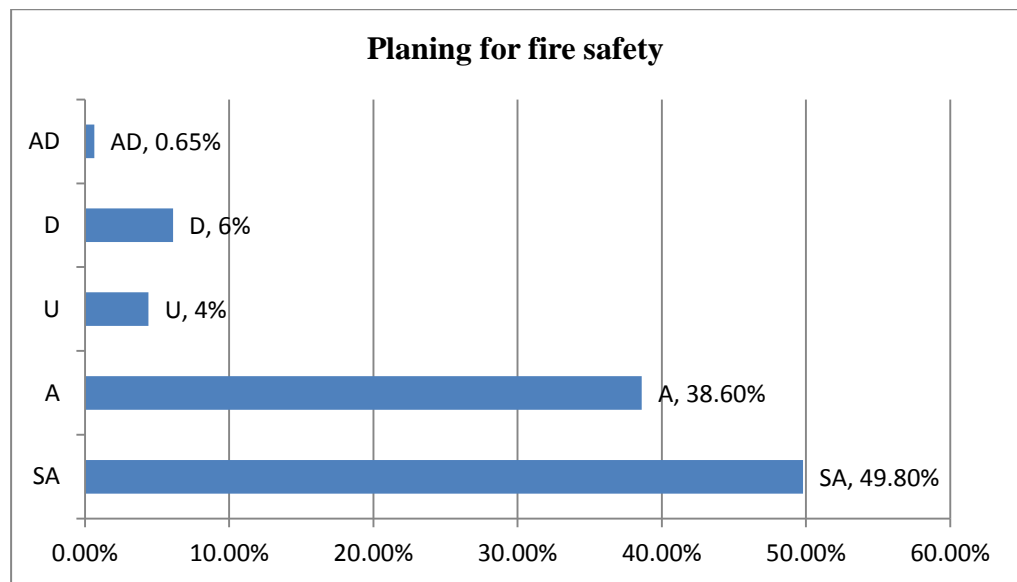
Figure 4.6 reveals that 113 (50%) and 87 (38.6%) strongly agree and agree respectively that school fire safety planning influences the implementation of fire safety standards. This totals up to 200 (89%) of respondents that general agreed. Having fire safety plans is supported by White (2011) who highlighted that fire safety plans are important as they increase the level of preparedness in case of a fire disaster.

4.7.4 What hinders fire safety planning in secondary schools?

The principals and their deputies were asked to indicate what hinders fire
safety planning in secondary schools. Their responses are shown in Table 4.7.

Table 4.7 *Hindrances to fire safety planning in secondary schools*

Factor n=50	Frequency	%
Inadequate financial resources	42	84
Ignorance or lack of knowledge on fire safety	45	90
lack of training for school stakeholders on fire safety	12	24
Irresponsible leadership, complacency and lack of commitment to fire safety management	6	12
Inadequate inspection, supervision and support by QASOs	2	4

Table 4.7 shows that most respondents i.e. 45 (90%), identified ignorance or
lack of knowledge on fire safety, a high proportion of 42 (84%) pointed
inadequate financial resources, while a low proportion of 12 (24%) indicated
lack of training for school stakeholders on fire safety and another very low
proportion of 6 (12%) indicated irresponsible leadership, complacency and
lack of commitment to fire safety management while 2 (4%) respondents
indicated inadequate inspection, supervision and support by QASOs as being
the major factors hindering school fire safety planning. It therefore emerged
that ignorance/lack of knowledge on fire safety, inadequacy of financial
resources and lack of training are the main factors inhibiting fire safety
planning and the subsequent implementation of fire safety standards in
schools.

4.7.5 What to include in a fire safety plan

Table 4.8 shows responses on what should be included in a school fire safety plan.

Table 4.8 *What to include in a fire safety plan*

Item n=225	SA		A		U		D		SD	
	F	%	F	%	F	%	F	%	F	%
Fire evacuation plans e.g. egress or escape	153	67.7	67	29.6	3	1.3	2	0.9	1	0.4
Staff duties and responsibilities	111	49.1	98	43.4	7	3.1	8	3.5	2	0.9
How to react to a fire emergency	124	54.9	98	43.4	4	1.8	0	0	0	0
Site plans	108	47.8	109	48.2	3	1.3	4	1.8	2	0.9
Floor plans showing evacuation routes	116	51.3	98	43.4	7	3.1	4	1.8	1	0.4
Records	90	39.8	106	46.9	18	8	10	4.4	2	0.9
Maintenance	101	44.7	121	53.5	3	1.3	1	0.4	0	0
Staff training	129	57	93	41.2	0	0	3	1.3	1	0.4
Fire simulation and fire drills	130	57.5	82	36.3	9	4	5	2.2	0	0

Table 4.8 shows that 153 (67.7%) strongly agreed and 67 (29.6%) agreed that fire evacuation plans including egress or escape routes should be included in a school's fire safety plan. 111 (49.1%) strongly agreed and 98 (43.4%) agreed on the inclusion of the staff duties and responsibilities in the school fire safety

plans.124 (54..9%) strongly agreed, 98 (43.4%) agreed that such plans should include steps and procedures on how to respond to a fire emergency. 108 (47.8%) strongly agreed and 109 (48.2%) agreed that site plans should be included in the school fire safety plans. The inclusion of floor plans showing evacuation routes in the safety plans was cited by 116 (51.3%) strongly agree, 98 (43.4%) agree. 90 (39.8%) strongly agreed, 106 (46.9%) agreed with the inclusion of records in fire safety plans. 101(44.7%) strongly agreed and 121 (53.5%) agreed on having maintenance included in the safety plans. 129 (57%) strongly agreed while 93 (41.2%) agreed that staff training is so crucial and should be in school fire safety plans. Finally on this theme, 130 (57.5%) respondents strongly agreed 82 (36.3%) agreed that fire simulation and fire drills be included in fire safety plans.

The Ministry of Education (2008 & 2012) spells out that schools should schedule practice drill sessions for fire and other eventualities that the safety committee deems necessary to practice. Fire drills should be done periodically (at least twice a term). Head teachers should regularly consult medical officers, architects, fire experts and first aid trainers for any relevant advice and assistance.

4.8.1 Findings from the observation checklist

Table 4.9 shows the findings from the observation checklist on compliance of school facilities with fire safety standards.

Table 4.9 *Findings from the observation checklist*

Item	Dormitory n=5		Halls n=5		Labs n=25		Classes n=25		Library n=25	
	F	%	F	%	F	%	F	%	F	%
Window grills removed	5	100	2	40	8	32	8	32	3	12
Windows easy to open outwards	5	100	2	40	8	32	8	32	3	12
Doors	5	100	5	100	25	100	25	100	25	100
Emergency exits	2	40	4	80	9	36	0	0	4	16
Fire-fighting equipment	4	80	2	40	13	52	7	28	5	20
First-aid kit	3	60	3	60	13	52	8	32	5	20
Safety instructions	4	80	4	80	13	52	5	20	5	20
Fire alarms/detectors	0	0	0	0		0	0	0	0	0
Stairs at both ends of Storey buildings	-		-		-		-		-	
Fire assembly points	1	20	1	20	4	16	4	16	3	12

Table 4.9 reveals that all the 5 (100%) boarding schools had removed window grills in their dormitories and the windows easily open outwards. However only 2 (40%) boarding schools had removed the window grills in their halls and their windows easily open outwards. 8 (32%) of the 25 sampled schools had removed window grills both in their laboratories and classrooms while only 3 (12%) removed window grills in the libraries and the windows open outwards.2 (40%) and 4 (80%) of the boarding schools in the study had emergency exits in their dormitories and halls respectively. Only 9 (36%) and 4 (16%) of the 25 schools in the study had fire emergency exits in their laboratories and libraries respectively. The Ministry of Education (2008 and

2012) requires that each dormitory must have doors at each end and an additional emergency exit at the middle, clearly labeled 'Emergency Exit'. All the doors should be wide enough, open outwards, lockable from inside and keys placed where a responsible person can easily reach them. Sadly, none of the schools (100%) had installed fire alarm/detectors such as fire and smoke detectors in their buildings. As for the fire assembly points, only 1 (20%) of the boarding schools had a fire assembly points for the dormitory and halls. An overall 3 (12%) of schools had fire assembly points for the laboratory, classrooms and library. Every school must maintain functional and fully equipped first aid or emergency kit(s) (Ministry of Education, 2008 and 2012). However the study revealed that only 3 (60%) boarding schools had such kit(s) in the dormitories. Of the 25 schools in the study, only 13 (52%) had maintained functional and fully equipped first aid or emergency kit(s).

4.8.2 Perimeter fence

Table 4.10 shows the observation made on schools that had a perimeter fence

Table 4.10 *Perimeter fence*

Item	School that have	%	Schools that do not have	%	Total
Schools	25	100	0	0	100
Total	25	100	0	0	100

Table 4.10 revealed that all 25 (100%) schools had a perimeter fence around the school. This finding is somehow similar to studies by Nderitu (2009), Omolo & Simatwa (2010) and Kirui (2011) that most schools had met some effort to fence their school compound with only one entry point. A well fenced

school deters unauthorized entry into the compound with only one entry point to the compound manned by security guards. Most schools had either a life or barbed wire fence. This implies that it is possible for arsonists and illegal gangs to gain entry into the compound through illegal routes rather than through the gate. This again is supported by Figure 4.7 which shows that 16% of the schools do not have a manned secure school gate. According to the Ministry of Education (2012) all schools must be appropriately fenced with a gate and security personnel, to secure its premises, properties and those of teachers and learners.

4.8.3 Manned secure school gate

Figure 4.7 shows the schools that have a manned secure gate.

Figure 4.7 *Manned secure school gates*
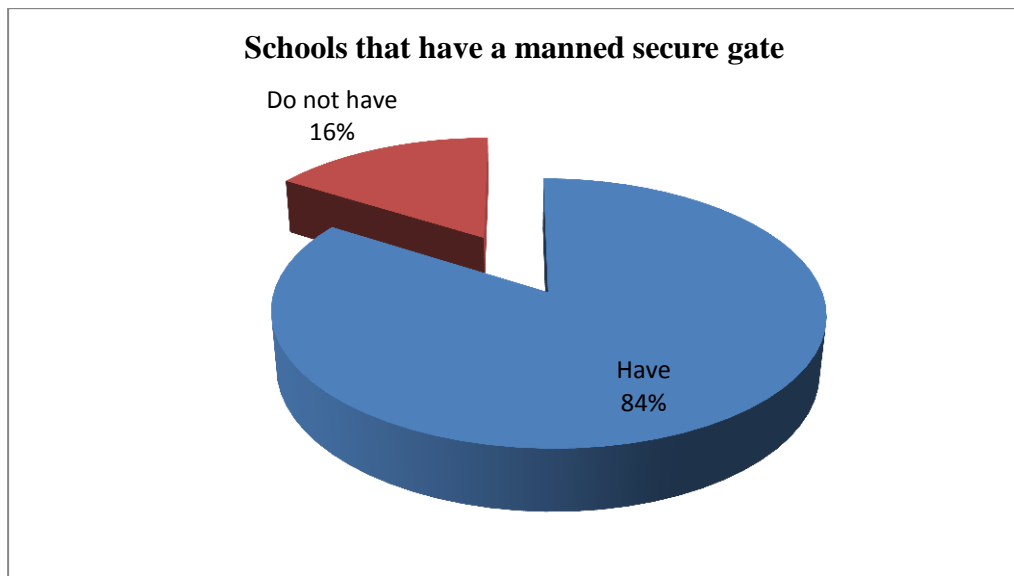
Figure 4.7 shows that 21(84%) of the schools in the study had a manned secure gate while 4 (16%) did not. According to Nyakundi (2012), majority of the schools did not have a manned secure gate thus creating room for

unscrupulous individuals with evil motives to gain entry into the school thereby creating a security threat to both learners and staff. A well manned secure school deters unauthorized entry of arsonists and illegal gangs into the compound with only one entry point to the compound. Interpretively, this means that some schools are yet to prioritize and fully implement fire safety standards.

4.8.4 Functional school safety committees

Figure 4.8 shows the percentage of schools in the study that had functional committee on school safety.

Figure 4.8 *Functional school safety committees*
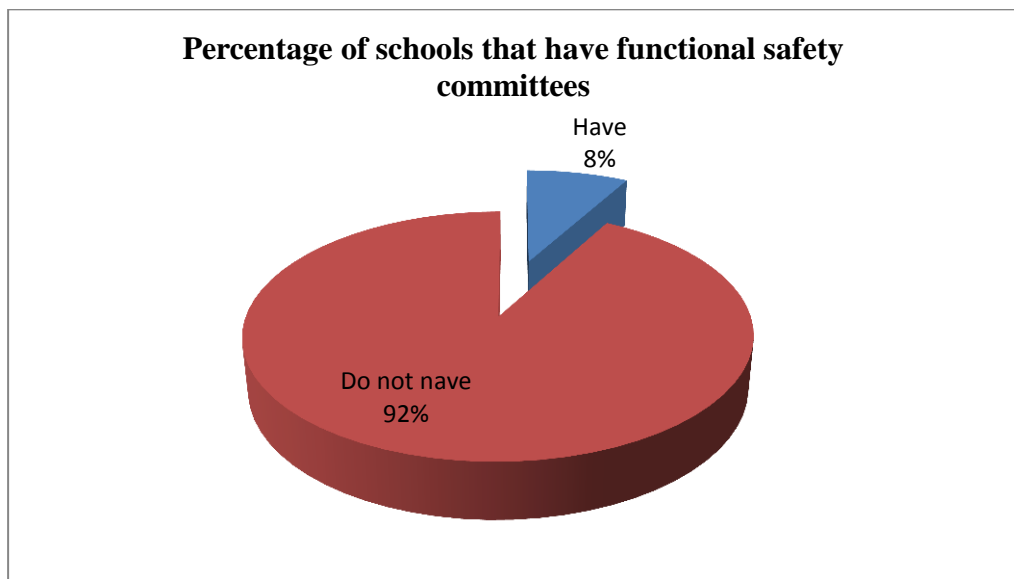
Figure 4.8 reveals that 23 (92%) of the schools under study did not have a functional committee on school safety. Only 2 (8%) schools had such crucial committees on school safety. This finding concurs with that of Nyakundi (2012), who asserts that most schools are vulnerable to disaster (of which fire is one) because they have not constituted a functional school safety committee.

The direct responsibility of overseeing school safety falls within a specific School Safety Committee. This high percentage of schools without functional safety committees can be interpreted to mean that that is the case due to ignorance of the fire safety standards, lack of training for school stakeholders, or just due to shear neglect and inadequate inspection by QASOs to not only disseminate safety standards but also to facilitate compliance e.g. ensuring that school safety committees are established.

School safety committee provides the leadership and coordination of the school safety programme. According to the Ministry of Education (2012), all schools must; establish functional safety committees comprising of;

    i)   Chair SMC or BOG – chair person

    ii) Head teacher – Secretary

    iii) Deputy head Teacher – member

    iv) Teacher in charge of school safety – member

    v) Guidance and Counseling teacher – member

    vi) Teacher Union Representative – member

    vii) An ex-official from AEO's office – member

    viii) A representative of crisis response team – member

    ix) Two other members of SMC or BOG – member.

The specific functions of this Committee shall be to: identify the safety needs of the school with a view to taking the necessary action, mobilize resources required by the school to ensure a **safe**, **secure** and **caring** environment for learners, staff and parents, monitor and evaluate the various aspects of School Safety with a view to enhancing school safety, form sustainable networks with

all stakeholders to foster and sustain School Safety, keep learners, parents and other stakeholders informed about School Safety policies and implementation activities, seek the support of parents and stakeholders and ensure their participation in activities relating to School Safety, constantly review issues of child safety in and around the school.

4.9 Regression analysis

In this section the researcher conducted a linear regression analysis to test the relationship between the School-based factors (financial resources, training, inspection and planning) and the implementation of the fire safety standards in public secondary schools. The model is represented by:

Fire safety standards $= \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + ei$

Table 4.11: *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.899[a]	.809	.783	.206

a. Predictors: (Constant), Planning for fire safety, Financial resources, Fire safety inspection, Fire safety training.

The R Squared show that the independent variables include financial resources, fire safety training, fire safety inspection and planning for fire safety explain 81% of the variance in the implementation of fire safety standards in public secondary schools. The results suggest that almost all the variables in this model are significant predictors of implementation of fire safety standards (at the 95 percent confidence level).

Table 4.12: *ANOVA*

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.407	4	1.352	31.711	.000[a]
Residual	1.279	30	.043		
Total	6.686	34			

b. Dependent Variable: Implemented fire safety standards

The regression results show that the significance value (*p-value*) of F statistics is less than 0.05 (it is actually 0.000). This implies that the independent variables (financial resources, fire safety training, fire safety inspection and planning) do explain the variation in the dependent variable (implementation of fire safety standards). Therefore the model is significant.

Table 4.13: *Regression Coefficients*

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	-.067	.136		-.494	.005
Financial resources	.135	.086	.180	1.568	.027
Fire safety training	.436	.161	.399	2.708	.011
Fire safety inspection	.004	.154	.003	.023	.032
Planning for fire safety	.432	.211	.396	2.050	.049

a. Dependent Variable: Implemented fire safety standards

Using the values of the coefficients (β) from the regression coefficient Table 4.12, the established regression equation takes the form of:

Implementation of fire safety standards = -0.067 + 0.135 financial resources + 0.436 training + 0.004 inspections + 0.432 planning.

The study shows that all the independent variables have positive relationship with the dependent variable (implementation of fire safety standards). The results show that a unit change in financial resources will results into a 0.135 change in implementation of fire safety standards. The findings further show that a unit change in fire safety training will results into a 0.436 change in implementation of fire safety standards. The findings also show that a unit change in fire safety inspections will result into 0.004 change in implementation of fire safety standards while a unit change in planning for fire safety will result into a 0.432 change in implementation of fire safety standards. The results show that all the variables are statistically significant as the p-values are less than 0.05 ($p > 0.05$).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study and its findings, conclusions, recommendations and suggestions for further research. They are based on the research objectives and questions.

5.2 Summary of the study

This study sought to investigate the school-based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County, Kenya. To achieve this, the researcher formulated four study objectives namely:

i) To determine how school financial resources influence implementation of fire safety standards in public secondary schools in Kenyenya District,

ii) To establish how fire safety training for school stakeholders influence the implementation of fire safety standards in public secondary schools in Kenyenya District,

iii) To examine how school fire safety inspection by the QASOs influences the implementation of fire safety standards in public secondary schools Kenyenya District and

iv) To assess how planning for fire safety influences the implementation of fire safety standards in public secondary schools in Kenyenya District.

Literature review examined the concept of fire safety, reviewed related literature on the influence of school financial resources, training of school stakeholders, frequency of school inspection by QASOs, and fire safety planning on the implementation of fire safety standards in secondary schools. The study adopted a descriptive survey research design. A total of 226 respondents participated in the study comprising of 25 principals, 25 deputy principals, and 175 HODs and the QA&SO Kenyenya District. Data was collected using questionnaires for the principals and deputies, HODs, an interview guide for the QA&SO and an observation checklist. Collected data was analyzed using descriptive statistics and presented in the form of Tables, charts and graphs.

On the first objective, the researcher found out that 206 (91%) of the respondents (n=226) indicated that they generally agreed on the influence of school financial resources on the implementation of fire safety standards. The influences to which they attributed school financial resources are the installation of additional fire safety equipment, servicing existing fire safety appliances, modification of existing buildings, purchase of expensive fire safety fittings and equipment, capacity development at all levels, and building of new fire safety compliant school infrastructure. As for the main sources of funds for school fire safety management, majority (60%) fundraising/harambee and PTA levies/school fees while an average of 119 (53%) identified the national government for its grants and FDSE funds through the MOES&T.

As for the second objective, 97% of respondents generally agreed to the influence of training of school stakeholders on fire safety on the implementation of fire safety standards. The influence was attributed to training being part and parcel of fire disaster preventive programme, being a process of creating awareness on the importance of fire safety, provision of information on fire hazards and their avoidance, equipping school personnel with special skills, knowledge to enable them deal new aspects of safety, enhancing the development of school safety policies and culture, increasing the level of fire safety knowledge, enhancing the accurate response to fire tragedies/preparedness, through it, head teachers and their deputies, support staff and students are inducted on their roles in fire safety management, imparting information to school stakeholders on the administration of first-aid, equipping teachers with fire-fighting techniques and empowering teachers to conduct regular fire drills and simulations.

The findings for the third objective show that the majority (91%) of respondents agreed with the influence of the frequency of school fire safety inspection by QASOs on the implementation of fire safety standards. These respondents attributed such influence to dissemination of MOES&T fire safety standards, facilitating compliance with fire safety standards, coordinating guiding and supporting headteachers in the implementation of the fire safety standards, assessing compliance levels on fire safety and also recommending temporary suspension of operations of the institution to the County Education Board (CEB) for a specific period until the basic standards are met.

As for the fourth objective, the study established that only 18 (36%) respondents indicated that their schools had fire safety plans while the majority 32 (64%) did not have (n = 50). On the influence of school fire safety planning on the implementation of fire safety standards, 89% (n = 226) agreed. School fire safety planning enhances the implementation of fire safety standards as they increase the level of preparedness in case of a fire disaster thereby preventing the loss of life and injuries, reducing damage to building and contents and quickening the resumption of normal school operations after fire.

Conspicuously, 23 (92%) of the schools under study did not have a functional committee on school safety. Only 2 (8%) schools had such crucial committees on school safety. This means that the majority of schools have not prioritized fire safety.

5.3 Conclusions

The study sought out to investigate the school-based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County, Kenya. The findings indicate that implementation of fire safety standards in schools is depended upon school financial resources, training of school stakeholders on fire safety, frequency of school fire safety inspection by the QASOs and school fire safety planning.

5.4 Recommendations

The study sought to investigate the school-based factors influencing the implementation of fire safety standards in public secondary schools in

Kenyenya District, Kisii County, Kenya. Having established the school-based factors influencing the implementation of fire safety standards and made the conclusions above, the following recommendations may be valuable if school safety is to be achieved:

i) The school Board of Management (BOM) should immediately acquire safety standards manual for schools in Kenya (2008). This manual will among other things help them in identifying the safety needs of the school, mobilizing resources required to create a safe environment, keep learners, parents and other stakeholders informed about school safety policies.

ii) School Board of Management (BOM) should establish functional committees on school safety. The school safety committee provides the leadership and coordination of the school safety programme.

iii) Schools Board of management (BOM) in conjunction with the Parents Teachers Association (PTA) should source more financial resources for fire safety management since implementation of fire safety standards requires massive financial resources.

iv) School stakeholders particularly the principals and their deputies, HODs, teachers, support staff and all members of the school safety committee should be trained regularly to oversee fire safety management in schools. Teachers and support staff should be trained how to handle fire safety equipment, initiate emergency evacuations and protect students in the event of fire by the fire and rescue department/ fire brigade. As well, they should be trained in providing emergency first-aid treatment.

v) Emergency response drills and simulations should be conducted regularly to train not only the students but also the school staff. The ministry of

education should employ more QASOs, train and equip them as to enhance their school fire safety inspection functions to enforce compliance to fire safety standards in schools.

vi) The schools safety committee should prepare fire safety or emergency plans to ensure pro-active response to school fires if and when they occur.

5.5 Suggestions for further research

The study identified the following areas for further research:

1. Community-based factors influencing the implementation of fire safety standards in both public and private schools.

2. How school leadership style influences the implementation of fire safety standards in schools both in the similar study area or other areas.

3. Challenges that schools face in the implementation of fire safety standards.

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APPENDICES

APPENDIX A

INTRODUCTORY LETTER

University of Nairobi,

P. O. BOX 30197,

Nairobi.

10th June, 2014.

The Head teacher,

………………………School

Dear Sir/Madam,

RE: PERMISSION TO COLLECT DATA FROM YOUR SCHOOL

I am a post graduate student at the University of Nairobi. I am conducting a study titled "School-Based Factors Influencing the Implementation of Fire Safety Standards in Public Secondary Schools in Kenyenya District, Kisii County." Your school has been selected to participate in this study. Kindly assist me carry the study in your school. The respondent's name and that of your institution need not appear anywhere in the questionnaire. The information provided will be used for academic research purposes only. Your cooperation is greatly appreciated.

Thank you.

Yours faithfully,

Ongori M. Elijah.

E55/81356/2012

APPENDIX B

QUESTIONNAIRE FOR PRINCIPALS AND DEPUTIES

This questionnaire seeks to gather information on school-based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County. Please do not write your name or that of your school anywhere in this questionnaire. Tick your responses in the box [   ] and in the Table to indicate whether you Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) or Strongly Disagree (SD) or fill in the blank spaces where appropriate.

Section A: General information

Indicate the type of your school:

(i) Boys' boarding [   ] (ii) Girls' boarding [   ] (iii) Mixed boarding [   ]

(iv) Mixed-day school [   ]. Any other, please specify ………………………

Section B: School financial resources

1. Do you agree that school financial resources influence the implementation of fire safety standards in schools in the following ways?

	SA	A	U	D	SD
For installation of additional fire safety equipment					
For servicing existing appliances					
Modifications of existing buildings					
To purchase expensive fire safety fittings and equipment					
For capacity development at all levels					
Building new fire safety compliant school infrastructure					

2. What are the main sources of school funds for fire safety management?

I)   …………………………………………………………………………

II) …………………………………………………………………………………

III) …………………………………………………………………………………

Section C: Training of school stakeholders on fire safety

Do you agree with the following statements on the influence of training of school stakeholders on the implementation of fire safety standards in schools?

	SA	A	U	D	SD
Training is part of the preventive programme					
Awareness creation on the importance of fire safety					
Provide information on fire hazards and their avoidance					
Equip the personnel with special skills, knowledge to enable them to deal with new aspects of safety					
For the development of safety policies and safety culture					
Increase the level of fire safety knowledge					
For accurate response to fire/fire preparedness					
Induct head teachers, deputy head teachers, support staff and students on their roles in fire safety management					
To impart information on the administration of first aid					
Equip teachers with fire-fighting techniques/preparedness					
Fire drills as awareness on fires					

Section D: Frequency of school fire safety inspection by QASOs

Do you agree with the following statements on the influence of the frequency of school fire safety inspection by QASOs on the implementation of fire safety standards in schools?

	SA	A	U	D	SD
For dissemination of MOEST fire safety standards					
Facilitate compliance with fire safety standards					
For the coordination, guidance and support of head teachers for the implementation of fire safety standards					
Assessment of compliance level on fire safety standards					
Recommend temporary suspension of operations of the institution to the County Education Board for a specific period until the basic standards are met					

Section E: Planning for fire safety

1. Do you have a school fire safety plan or fire emergency plan...

2. Do you agree with the following statements on the influence of planning

   for fire safety on the implementation of fire safety standards in schools?

	SA	A	U	D	SD
To prevent loss of life and injuries					
To reduce damage to buildings and contents					
Because the fire code requires it					
To quicken the resumption of normal operations					

3. Do you think the following should be included in the school fire safety

plan?

	SA	A	U	D	SD
Fire evacuation plans e.g. egress or escape					
Staff duties and responsibilities					
How to react to a fire emergency					
Site plans					
Floor plans showing evacuation routes					
Records					
Maintenance					
Staff training					
Fire simulation and fire drills					

4. In your opinion what hinders fire safety planning in secondary schools?

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

…………………………………………………………………………………..

………………………………………………………………………………….

Thank you very much for taking your time to fill this questionnaire

APPENDIX C

QUESTIONNAIRE FOR HODS

This questionnaire seeks to gather information on school based factors influencing the implementation of fire safety standards in public secondary schools in Kenyenya District, Kisii County. Please do not write your name or that of your school anywhere in this questionnaire. Tick your responses in the box [   ] and in the Table to indicate whether you Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) or Strongly Disagree (SD) or fill in the blank spaces where appropriate.

Section A: General information

Indicate the type of your school:

(i) Boys' boarding [   ] (ii) Girls' boarding [   ] (iii) Mixed boarding [   ]

(iv) Mixed-day school [   ]. Any other, please specify ………………………

Section B: School financial resources

1. Do you agree that school financial resources influence the implementation of fire safety standards in schools in the following ways?

	SA	A	U	D	SD
For installation of additional fire safety equipment					
For servicing existing appliances					
Modifications of existing buildings					
To purchase expensive fire safety fittings and equipment					
For capacity development at all levels					
Building new fire safety compliant school infrastructure					

2. How can schools raise funds for fire safety management?

i) …………………………………… ii) ………………………………..

iii) …………………………………….. iv) …………………………………….

Section C: Training of school stakeholders on fire safety

Do you agree with the following statements on the influence of training of school stakeholders on the implementation of fire safety standards in schools?

	SA	A	U	D	SD
Training is part of the preventive programme					
Awareness creation on the importance of fire safety					
Provide information on fire hazards and their avoidance					
Equip the personnel with special skills, knowledge to enable them to deal with new aspects of safety					
For the development of safety policies and safety culture					
Increase the level of fire safety knowledge					
For accurate response to fire/fire preparedness					
Induct head teachers, deputy head teachers, support staff and students on their roles in fire safety management					
To impart information on the administration of first aid					
Equip teachers with fire-fighting techniques/preparedness					
Fire drills as awareness on fires					

Section D: Frequency of inspection by QASOs

Do you agree with the following statements on the influence of frequency of school fire safety inspection by QASOs on the implementation of fire safety measures in schools?

	SA	A	U	D	SD
For dissemination of MOEST fire safety standards					
Facilitate compliance with fire safety standards					
For the coordination, guidance and support of head teachers for the implementation of fire safety standards					
Assessment of compliance level on fire safety standards					
Recommend temporary suspension of operations of the institution to the County Education Board for a specific period until the basic standards are met					

Section E: Planning for fire safety

1. Please put a tick for each of the following statements on the influence of
    planning for fire safety on the implementation of fire safety standards in
    schools.

	SA	A	U	D	SD
To prevent loss of life and injuries					
To reduce damage to buildings and contents					
Because the fire code requires it					
To quicken the resumption of normal operations					

2. Do you think the following should be included in the school fire safety
    plan?

	SA	A	U	D	SD
Fire evacuation plans e.g. egress or escape					
Staff duties and responsibilities					
How to react to a fire emergency					
Site plans					
Floor plans showing evacuation routes					
Records					
Maintenance					
Staff training					
Fire simulation and fire drills					

Thank you very much for taking your time to fill this questionnaire

APPENDIX D

INTERVIEW GUIDE FOR QASO

Say whether you Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) or Strongly Disagree (SD) with the following on fire safety in schools.

1. Do school financial resources influence the implementation of fire safety standards in terms of the following statements?

	SA	A	U	D	SD
For installation of additional fire safety equipment					
For servicing existing appliances					
Modifications of existing buildings					
To purchase expensive fire safety fittings and equipment					
For capacity development at all levels					
Building new fire safety compliant school infrastructure					

2. Does training of school stakeholders on fire safety on the implementation of fire safety standards in schools regarding the following?

	SA	A	U	D	SD
Training is part of the preventive programme					
Awareness creation on the importance of fire safety					
Provide information on fire hazards and their avoidance					
Equip the personnel with special skills, knowledge to enable them to deal with new aspects of safety					
For the development of safety policies and safety culture					
Increase the level of fire safety knowledge					
For accurate response to fire/fire preparedness					
Induct head teachers, deputy head teachers, support staff and students on their roles in fire safety management					
To impart information on the administration of first aid					
Equip teachers with fire-fighting techniques/preparedness					
Fire drills as awareness on fires					

3. Does the frequency of school fire safety inspection by the QASOs influence the implementation of fire safety standards with regard to the following statements?

	SA	A	U	D	SD
For dissemination of MOEST fire safety standards					
Facilitate compliance with fire safety standards					
For the coordination, guidance and support of head teachers for the implementation of fire safety standards					
Assessment of compliance level on fire safety standards					
Recommend temporary suspension of operations of the institution to the County Education Board for a specific period until the basic standards are met					

4. (a) Do you agree that school fire safety planning influence the implementation of fire safety standards in the following ways:

	SA	A	U	D	SD
To prevent loss of life and injuries					
To reduce damage to buildings and contents					
Because the fire code requires it					
To quicken the resumption of normal operations					

(b) Should the following be included in the school fire safety plan?

	SA	A	U	D	SD
Fire evacuation plans e.g. egress or escape					
Staff duties and responsibilities					
How to react to a fire emergency					
Site plans					
Floor plans showing evacuation routes					
Records					
Maintenance					
Staff training					
Fire simulation and fire drills					

(c) In your opinion what hinders fire safety planning in secondary schools?

…………………………………………………………………………………..

APPENDIX E

OBSERVATION CHECKLIST

Check for the existence of the following in halls, dormitories, laboratories classrooms and library. Put a tick for compliance or x for non-compliance.

Item	Dormitory	Halls	Laboratory	Classrooms	Library
Window grills removed					
Windows easy to open outwards					
Doors					
Emergency exits					
Fire-fighting equipment					
First-aid kit					
Safety instructions					
Fire alarms/detectors					
Stairs at both ends of Storey buildings					
Fire assembly points					

Put a tick for compliance or x for non-compliance for the following:

i)   School has a Perimeter Fence around the school   [   ]

ii)   School has a manned Secure School Gate   [   ]

iii)   School has a functional committee on school safety   [   ]

APPENDIX F

RESEARCH AUTHORIZATION BY NACOSTI

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

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

10th June, 2014

NACOSTI/P/14/1643/1826

Elijah Morancha Ongori
University of Nairobi
P.O.Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"School-based factors influencing the implementation of Fire Safety Standards in public secondary schools in Kenyenya District, Kisii County,"* I am pleased to inform you that you have been authorized to undertake research in **Kisii County** for a period ending **31st July, 2014.**

You are advised to report to **the County Commissioner and the County Director of Education, Kisii 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.

SAID HUSSEIN
FOR: SECRETARY/CEO

Copy to:

The County Commissioner
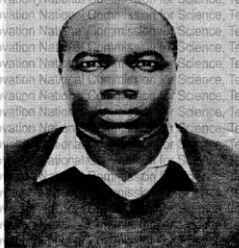The County Director of Education
Kisii County.

APPENDIX G

RESEARCH CLEARANCE PERMIT

THIS IS TO CERTIFY THAT:
MR. ELIJAH MORANCHA ONGORI
of UNIVERSITY OF NAIROBI, 371-40200
kisii,has been permitted to conduct
research in *Kisii County*

on the topic: *SCHOOL-BASED FACTORS INFLUENCING THE IMPLEMENTATION OF FIRE SAFETY STANDARDS IN PUBLIC SECONDARY SCHOOLS IN KENYENYA DISTRICT, KISII COUNTY*

for the period ending:
31st July,2014

Permit No : NACOSTI/P/14/1643/1826
Date Of Issue : 10th June,2014
Fee Recieved :Ksh 1,000

....
Applicant's Signature

....
*Secretary
National Commission for Science,
Technology & Innovation*

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 without prior appointment.
3. No questionnaire will be used unless it has been approved.
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

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT