DISASTER AWARENESS AND PREPAREDNESS OF SECONDARY SCHOOLS IN HOMA BAY COUNTY, KENYA

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University of Nairobi

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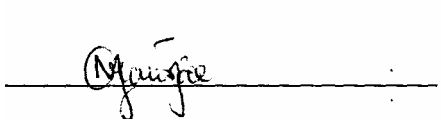
DECLARATION

This thesis is my original work and has not been presented for award of a degree in any other university



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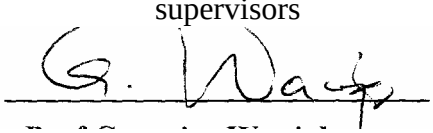

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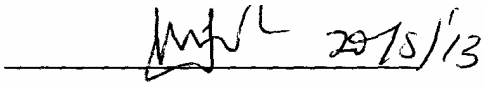

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DEDICATION

This work is dedicated to my parents Michael Akumu and Jane Aoko, my siblings Cyrilus Ochieng, Jackline Atieno, Gabriel Atieno and Agnes Akello, my wife Gladys Acheing, my sons Benedict Ngome and Arshavin Wasonga.

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ABBREVIATIONS AND ACRONYMS

ANPPCAN	African Network for the Prevention and Protection against Child Abuse and Neglect
BoMs	Board of Managements
CERNET	China Education and Research Network
DEO	District Education Officer
DREF	Disaster Relief Emergency Fund
DRR	Disaster Risk Reduction
EFA	Education for All
IFRC	International Federation of Red Cross and Red Crescent Societies
IRIN	Integrated Regional Network
KACC	Kenya Anti Corruption Commission
KAIS	Kenya AIDs Indicator Survey
MoE	Ministry of Education
MoPW	Ministry of Public Works
NCES	National Centre for Education Statistics
NCST	National council for Science and Technology
NFPA	National Fire Protection Association
OECD	Organization for Economic Co-operation and Development.
RTIs	Road Traffic Injuries
U NDP	United Nations Development Programme

UNESCO	United Nations Educational Scientific and Cultural Organization
UNICEF	United Nation Children's Fund
UNSIDR	United Nations International Strategy for Disaster Reduction
USA	United States of America
WHO	World Health Organization

ABSTRACT

The study examined disaster awareness and preparedness of secondary schools in Homa Bay County. The study objectives were to identifying types of disasters found in secondary schools, establishing levels of disaster awareness and preparedness, establishing administrative strategies put in place by school managers to enhance disaster awareness and preparedness and examining ways through which school facilities have been modified to cope with school disasters. The study adopted a descriptive survey design and targeted 52 principals, 420 secondary schools teachers and 6,000 students. 52 principals were purposively selected for the study, 84 teachers and 600 students were sampled for the study. Data were collected using questionnaires and an observation schedule. Quantitative data from closed-ended items were analysed using frequency counts. Frequencies and percentages obtained were presented in tables and graphs which were then internalized and described.

The findings of the study revealed that secondary schools in Homa Bay County are faced with a variety of disasters with varying magnitudes most of which are floods-related as stated by 85.4% of principals, Low extent of planning for disaster awareness attributed to rare planning and attendance of workshops and seminars on disaster awareness given that 81.4% of teachers had never attended these workshops. It also established that crucial disaster awareness information materials such as school safety manuals were not available in most schools (70.9%). It was also found that most secondary students (75.4%) were not conversant with road safety rules as some of them were flouting these rules which might have exposed them to transport related disasters. The study further revealed that very little efforts had been done by school administrations to enhance disaster awareness and preparedness as none of the school had put in place early warning mechanisms, Disaster awareness and preparedness guidelines were not available in a large number of schools (89.6%) and that most secondary schools (75.0%) did not even have school safety sub-committees. Most school administrations (52.9%) also took roll calls very often before students retired to bed on a regular basis and that there were regular patrols by the school security personnel to ensure safety in schools.

From the findings, most secondary schools in Homa Bay County were not adequately prepared to deal with disasters as a result of floods, landslides, thunderstorm/lightening related disasters, earthquake related disasters, disasters as a result of strong winds, fire related disasters, and disasters arising from poisonous chemical emissions and severe pollution. It was also established that most secondary schools had not modified their school physical facilities in line with safety requirements given that most secondary schools (43.8%) in the County had overcrowded classrooms, (54.8%) having narrow doors which may have made it hard for students to evacuate in case of an emergency and a number of them (39.5%) had doors that opened inwards thus making it difficult to force them open from inside in case of emergency.

The study recommends that every secondary school need to have a plan for development of capacity for the staff and students to be better prepared in responding to disaster, School administrations and other stakeholders ought to provide necessary information and materials support to schools to promote disaster preparedness, and school administration need to protect investment in physical infrastructure and plan for reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of disaster. In view of the limitations and delimitations of the study, the study suggested a study assessing the training needs of Ministry of Education officials and principals regarding disaster awareness and preparedness in secondary schools and similar study be carried out in other parts of the country given that disasters can possibly occur in any school within the country.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Safety of persons is a matter of concern to all and sundry in every part of the world. In fact all organizations and institutions of learning have safety measures put in place. All institutions of learning are viewed as heavens of peace worldwide. Notwithstanding this view, institutions of learning are reported to be experiencing serious cases of insecurity. All over the world, there has been an upward trend in the number of school children dying or getting injured in school violence, disasters and emergencies that would be avoided if safety policies were strictly adhered to (Simatwa, 2007).

The safety of children at some schools has been questionable due to recurrence of disasters. The availability of preparedness measures in most of the schools in developed countries has tremendously reduced the impact of incidences (U.S. Fire Administration, National Fire Data Centre, 2007). In developing countries, however, the contrary is the case, for the lack of or inadequate preparedness measures in most schools, and the increase in disaster incidents are raising alarm. The physical, financial and emotional devastation are the common impacts to both developing and developed countries. The closure of schools, damage to school properties, death, injuries and trauma are very common depending on the magnitude and severity of the disaster itself besides this it influences active participation of students in schools (Blackaby, 2007; Onyango,2008). The magnitude and severity of a disaster varies depending on the level of preparedness.

In this regard, most of the secondary school disaster incidents in developing countries had severe impact on human being due to the poor level of preparedness.

While school management, parents and children themselves need to be keen on the safety of school environment, United Nations agencies and other humanitarian organizations have been advocating for school safety. The protection of children from disaster has been alluded to in the Humanitarian Charter and International Humanitarian Law (Geneva conventions, 1949). It describes the critical tenets that guide humanitarian action and asserts the right to protection and assistance (Geneva conventions, 1949). The charter recognises that preparedness in the education sector advocates for preservation of the right to life with dignity, protection against threats and availability of basic needs in case of disasters (Sphere Standards Project, 2004).

According to Carter (2001), apart from family and community, the second important grooming ground for children is a school, where children are imparted more knowledge and skills. It is expected that these places should be safe environment for children. It is unfortunate to expose children to vulnerable environment unknowingly or knowingly. School safety is a human concern for every school and community. It must be taken seriously. It is also a legal concern because schools can be held liable if they do not make efforts to provide a safe and secure school environment. How schools are built and maintained is an integral part of school safety or disaster preparedness. Schools with inadequate disaster preparedness are more vulnerable to disaster.

School and neighbourhood need to work together to ensure students are safe at school, to and from school. Violence in and around schools directly affects educators and students thereby reducing school effectiveness and inhibiting students meaningful learning. Additionally, unsafe school neighbourhood may place students who are already at risk of school failure for other reasons in further jeopardy. The schools can also be insecure more so if there are no access control to intruders. Schools that store materials in stairways will have more problems during a fire or emergency. Schools located in flat areas will likely be flooded in the event of heavy rainfall (Kisantas, Ware, and Martinez-Arias, 2004; NCES, 1995).

Every school is unique by virtue of its design, location, and students, and each has its own history and culture. Some schools are relatively open and safe while others are highly protected yet unsafe. That is why disaster preparedness in school and the facilities should be planned and implemented. The school, district disaster management staff in alliance with local Non Governmental Organizations (NGOs) emergency responders and the school community, can combine effort in assessing the safety and security of school buildings, grounds, and surroundings then make a disaster preparedness plan besides seeing how to implement the plan (Crowe, 2000).

Disaster incidents in secondary schools have been happening worldwide, and no country is spared from this problem. Though the magnitude and severity differ from one country to another, this is attributed to the fact that the level of disaster awareness and preparedness differ among different nations. United Kingdom, one of the developed countries has also experienced several disaster incidents in schools. According to the

survey conducted in United Kingdom by Arson Control Forum in 2006, nearly half of all secondary schools surveyed had experienced a fire serious enough to call fire and rescue services in the past three years (Arson Control Forum, 2006). The Government has created awareness to school children through providing fire safety education and give advice on fire prevention, risk assessment, evacuation and anti – arson measures (Arson Control Forum, 2006).

Despite the fact that prevention and protection measures are in place, fire and rescue services in England and Wales attend to around 1200 school fire episodes every year (Arson Control Forum, 2006). The survey results by the Arson Control Forum showed that 64 percent of the schools taught fire safety education and 62 percent had taken some precautions against fire. Disaster incidences in schools were reported to have long term and short-term impacts depending on the magnitude and severity of the disaster itself. Among the common effects noted were temporary closure of schools, disruptions of lessons, loss of teaching notes, and loss of morale amongst teachers and pupils and negative publicity of the school. The most common causes of schools fires in England and Wales were identified to be of two types, the one started by suspicious or deliberate circumstances or accidental (Arson Control Forum, 2006). The suspicious or deliberate circumstances are like setting fire on the bin, toilet rolls or paper, rubbish or litter. The accidental fire causes are careless disposal of cigarette butts (Arson Control Forum, 2006).

In the United States of America the cases of disasters in secondary schools have decreased tremendously, which reflects the high level of preparedness which is in place. A Report from United States Fire Administration, National Fire 2007 revealed that there were no reported school related fire deaths in 2007. This does not mean that there were no fire cases in secondary schools, but the impact to the life of people was minimal. This situation is contributed by the enforcement of policies and strict monitoring. Fire drills and fire education in schools are taken very seriously (United States Fire Administration, 2007). The fire accidents in secondary schools in both the United States of America and United Kingdom have some similarities, in both prevention and protection measures, as both awareness and equipment have been put in place. Preparedness reduces the severity of the fire accident to the people and properties. There is significant reduction in death cases in most of the fire accidents in UK and USA compared to other countries.

Countries such as Bangladesh, China, Cambodia, Philippines, Honduras, India, Indonesia and many others have intergraded disaster risk reduction (DRR) into school's curriculum. In Sri Lanka, DRR aspects are integrated in subject of Geography for secondary schools. In India, the Centre Board for secondary education has introduced disaster management as a separate subject in grade VIII, IX and X. In Philippines China, and Cambodia, DRR was mainstreamed into second grade subjects of the national curriculum, and teachers were trained in curriculum modules (UNDP, 2010).

In Africa, disasters in secondary schools are very common and frequent. For example, in 2001, fire gutted a girl secondary school in Gindiri village, Northern Nigeria (Independent newspaper, March 2001), which killed twenty-three students and injured

fourteen. Students were trapped in the dormitory because it was locked and fortified with iron bars and a chain. Local residents managed to save some of them by opening a bathroom door. The fire was caused by overturned kerosene lantern (Independent newspaper, March 2001). In Uganda, in March 2009, a dormitory of Alliance Secondary School in Ibanda district was gutted by fire and property worth millions of Uganda shillings was destroyed (New Vision, March 2009). Despite Police Fire Unit arrival at the fire scene, the truck could not be driven closer to the dormitory because of lack of access (New Vision, March 2009).

In April 2008, fire gutted Ugandan Budo Junior School near Kampala and at least 19 girls and two adults died. It was not clear how many children were in the room. It was established that the hostel doors were locked from outside (BBC, 15th April 2008). In March 2008, Maracha Secondary School in Maracha Terengo district in Uganda was gutted by fire at 7.30 am and two boys' dormitories were burnt (New Vision, March 2008). There were no injuries but properties of students and school were destroyed. A land dispute involving the school and the community and animosity among teaching staff were suspected to be one of the causes that led to fire (New Vision, March 2009). In July 2006, thirteen children were killed and several injured when fire gutted an Islamic Secondary School in Western Uganda (New Vision, July 2009).

Research study conducted by Akali, Khabamba and Muyinga (2011) reveals that, there is little done to prepare secondary schools in Kenya for fires. He postulated that, only a handful of secondary schools have fire fighting extinguishers in office, laboratories,

stores and kitchen. The existing fire extinguishers are not regularly serviced. The finding further concurs with Njoroge (2008) finding that, school inspectors (QUASOs) hardly perform safety assessment during routine checks in school and many schools have limited supply of water or lack hydrant points that would be effective in putting out fire. These findings further concur with the findings that resulted from the research on institutional unrest. Among the notable events, in 1998, grief befell the coastal city of Kenya after 26 teenage girls were charred in Bombolulu secondary school near Mazeras when their dormitory caught fire. Reports indicated that all the students who died were in an overcrowded dormitory of about 130 students. It was also said that one of the two doors to the dormitory was locked from the outside and all of its ten windows were barred. There were also no fire extinguishers. A team set up to investigate the blaze reported an electrical fault, an accident and spontaneous combustion. It said some of the girls were killed in a stampede as they tried to escape through two narrow doors (Oduor, 2012).

There are also disasters of serious public health importance in water systems in Kenya. Incidents of drowning in Kenyan lake particularly Lake Victoria are routinely reported in the media. In addition, the incidences of crocodile and hippopotamus attack in lakes and rivers. Floods has become a cause of disaster all over Kenya particularly in Nyanza and Western Provinces with Nyando, Kisumu, Rachuonyo, Homa Bay and Busia districts being most affected. The total number of deaths reported all over the country showed how the country has become vulnerable to floods and droughts. Experts estimate that droughts and floods cost Kenya at least Sh75 billion with adverse effects on water and food security, human and animal lives, and extensive damage to the infrastructure. The

schools in these areas suffer the same predicaments and meaningful learning is always interrupted (Achoka & Maiyo 2008; Kenya Red Cross Society, 2006;Onyango,2008).

The Ministry of Education has published a school safety manual to ensure safety in schools. Some schools a have complied, some have not and some are yet to comply with the school safety manual guidelines. Disasters are bound to happen and when it strikes a school, properties worth millions, lives and times for studies is lost. The study therefore investigated disaster awareness and preparedness in secondary schools of Homa Bay County.

1.2 Statement of the Problem

Disasters disrupt education and can cause psychological trauma. Under UN convention on the rights of the children, children have inalienable rights in all circumstances, including disasters. The convention and DRR are mutually reinforcing. According to Disu (2004) Restoring or maintaining schooling in emergencies upholds Article 28 (right to education).Educating children about disaster risk and empowering them to use the knowledge support Article 6 (life, survival and development),while ensuring the participation and voices of children in DRR upholds Article 12 (respect for children views).

The government of Kenya has formulated a National Policy on Disasters Management to institutionalize mechanisms for addressing disasters but the goal has not been achieved. The National Disaster Management Policy Legal Framework of 2004 is available in

various legislative Acts Such As: The Explosive Act [Cap 115]; The Water Act [Cap 372]; The National Police Act [Cap 84]; The Pharmacy and Poisons Act [Cap 244]; The Food, Drugs and Chemical Substances Act [Cap 254; and The Preservation of Pubic Security Act [Cap 57].The policy framework effort has been futile as secondary schools in Kenya continue to be vulnerable to disaster. Mburu (2012) investigated factors influencing the implementation of safety standards in secondary schools in Limuru District, Kiambu County, Kenya. The study sample size comprised of 19 principals, 342 teachers and 8,238 students. Three research instruments were used namely questionnaire, check list and interview schedule. The study revealed 33% of the principals considered the funds allocated for catering for safety needs as adequate to a fair extent while 67% were of the opinion that the funds allocated were not enough at all. So the schools have not effected safety requirements. Ndirangu, Ocharo, & Njoka,'s (2006) study on vulnerability of secondary schools in Kenya to disasters revealed the same predicament of inadequate disaster awareness and preparedness citing example of skimpy budgetary allocation by the BoMs towards disaster awareness and preparedness in secondary schools to be as low as 10% of the total school budget.

Several innocent boys and girls have lost their lives to fire incidents more so in boarding schools, thereby raising a number of questions on the security of learners in boarding schools. Even with the interventions to curb fires, arsons and school unrests, the latest tragedy in Homa Bay County, where eight pupils perished after a fire gutted down a dormitory in certain girls' boarding school amid the late education minister Hon.Mutula Kilonzo ban on all holiday tuition. This brought to light the real living conditions of

students and the disregard of government policies. According to a report from the incident, the girls were locked from outside. These incidents therefore call for the study of disaster awareness and preparedness in other schools in Homa Bay County in order to avoid future re-occurrences (Oduor ,2012).

Red Cross and Red Crescent (2009) pointed out at least 300 families that were displaced by floods after heavy rainfall in Homa- Bay County with Wahambla village in East Kanyada location being worst hit. River Oluch, River mango, River Nyalkinyi and River Oduor Ochicho broke their banks. Nine schools were reported to be marooned by water and this interrupted learning before restoration of the buildings could be done. The marooned schools included; Kuoyo Kochia secondary school, Odienya secondary school, Ombogo academy among others. These conditions are compounded by breakout of waterborne diseases such as cholera and typhoid .These incidents raise questions on the level of disaster awareness and preparedness in secondary schools in Homa Bay County since the same has not been documented. For example to what extent do schools comply with stated guidelines? Hence, necessitating the study of disaster awareness and preparedness of secondary schools in the Homa-Bay County.

1.3 Purpose of the Study

The purpose of the study was to investigate disaster awareness and preparedness of secondary schools in Homa Bay County.

1.4 Objectives of the Study

The objectives of the study were:

a) To identify the types of disasters facing secondary schools in Homa Bay County.

b) To establish extent of planning for disaster awareness in secondary schools in Homa Bay County.

c) To establish levels of disaster preparedness in secondary schools in Homa Bay County.

d) To establish administrative strategies put in place by school managers to enhance disaster awareness and preparedness.

e) To examine ways through which school facilities are modified to cope with school disasters.

1.5 Research Questions

To achieve the objectives, the following research questions were answered:

(i) What are the types of disasters facing secondary schools in Homa Bay County?

(ii) To what extent are secondary schools in Homa Bay County plan for disaster awareness?

(iii) What are the levels of disaster preparedness in secondary schools in Homa Bay County?

(iv) What administrative strategies have school managers put in place to enhance disaster awareness and preparedness?

(v) In what ways have school facilities modified to cope with school disasters?

1.6 Significance of the Study

There seem to be very little research conducted on this topic and particularly no study has been done in secondary schools of Homa Bay County yet the issue of disasters management is a thorny national issue. The study findings bridges that gap and contribute to the general field of knowledge, which is the main objective underpinning any research undertaking. The research findings may be of utmost importance to principals, teachers, students and education stakeholders to employ basic need approach planning theory that give priority to provision of essential services such as security to plan for school activities. MoE may use the findings to guide the formulation of policies, plan for revamping and improving on existing policies and practices in secondary schools within Homa Bay County. The report findings may also be useful to any NGOs interested in planning and directing of mitigation of disasters or providing their services, relief food, and funds towards saving life in case of disaster in Homa Bay County.

1.7 Limitations of the Study

Limitations are conditions beyond the control of the researcher and may place restrictions on the conclusions of the study (Keith, 2009; Nachmias & Nachmias 2007). There were no data on disaster awareness and preparedness of secondary schools in Homa Bay County. There were also cases of exaggerated feedback or misinformation as the researcher was not able to control the attitude of the respondents as they responded to the questionnaires. The researcher used observation schedule to provide further insight and use it as a correction tool for exaggerated feedback of misinformation.

1.8 Delimitation of the Study

The study was confined to Homa Bay County. This meant the study findings are a reflection of unique conditions prevalent in the Homa Bay County and therefore the generalization and conclusions to other areas other than Homa Bay County have to be treated with a lot of caution.

1.9 Assumptions of the Study

The study had the following assumptions:

i) The data were collected objectively that allowed for valid observations and recommendations made from the result.

ii) The respondents sampled for the study were honest and willing to provide truthful responses to the entire study items.

1.10 Definition of Significant Terms

Disaster refers to a calamity that may cause damage or destruction to property or distress or injury to persons.

Disaster awareness refers to having relevant knowledge and skills on disaster management that can help one identify and mitigate disaster occurrences.

Disaster drills refer to an exercise intended to train people in duties and escape procedures to be followed in case disaster.

Disaster preparedness refers to wide range of measures, both long term and short term, designed to save lives and limit the amount of damage that might otherwise be caused by disaster.

Fire drills refer to an exercise intended to train people in duties and escape procedures to be followed in case of fire outbreak.

Hazard refers to a damaging activity or phenomenon which causes loss of life or injury, property damage, social and economic disruption of life, and environmental degradation among others.

Impact refers to specific effects of hazard or disaster also referred to as consequences or outcomes.

Mitigation refers to short and long term actions programmes policies implemented in advance of a natural hazard or in its early stages to reduce the degree of risk to the people.

Principals refer to head teachers as the teacher with the overall administration duties as laid in education Act [Cap 212].

Risk refers to the probability of harmful consequences or losses resulting for interaction between natural hazards and vulnerable conditions of property and people.

School community refer to a collective term referring to principal, teachers and students.

Secondary school refers to registered educational institution that harbours learners who have graduated from primary education. It is an intermediate institution between primary school and a college or university.

Vulnerability refers to a set of conditions resulting from physical, social, economic and environmental factors which increases the susceptibility of a community to impact of disaster.

1.11 Organization of the Study

The study has five chapters. Chapter one includes the background to the Problem, Statement of the Problem, Purpose of the study, Objectives of the study, Delimitations of the study, Basic assumptions of the study. Chapter two entails review of literature related to the study classified under the following subheadings: The concept of disaster awareness, and concept of disaster preparedness ,Safety standards required for schools, Significance of disaster awareness and preparedness , Factors influencing Disaster Preparedness and Response, Causes of Disasters in Kenyan secondary Schools, Challenges faced in Designing and Construction of School Buildings Resistant to All Types of Disaster, Measures of Curbing Disaster in secondary schools in Kenya, Government Response towards Disaster awareness and preparedness in Kenyan Secondary Schools, Summary of Related Literature, Theoretical framework and Conceptual frame work of the study. Chapter three presents the research methodology by enumerating The Research Design, Target Population, Sample Size and Sampling Techniques. Chapter four entails analysis, presentation and interpretation of data .Chapter five entails Summary of the Study, Conclusion, Recommendations, and Suggestions for Further Research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section presents the concepts of disaster awareness ,and concept of disaster preparedness, significance of disaster awareness and preparedness, factors influencing disaster awareness and preparedness, causes of disasters in schools, challenges facing designing and constructing of school buildings resistant to all types of disaster, measures for curbing disasters in school, government of Kenya response towards disasters in secondary schools, summary of related literature and conceptual framework of the study.

2.2. The Concept of Disaster Awareness

Disaster awareness borrows heavily from education planning. Education planning starts with a vision that will bring change or benefit. The educational planner therefore develops a road map that will help bring the desired change. Similarly disaster awareness involves identifying activities to be undertaken within the context of disaster risk management. Schools with proper disaster awareness manage the disasters risks very well. It is incumbent to have the entire school community being directly engaged in learning about disaster preparedness and identifying solutions to protect the schools (Kay, 2003).

According to Grant (2002) disaster awareness in schools, can be incorporated in institution through strategically posting safety rules, installing fire fighting equipments, evacuation exits, maintain buildings, organizing seminars on disaster awareness and involving child-to –child peer education, the use of songs, electronic and print media, action learning and using science education as a means to introduce studies of disaster risk.

2.3. The Concept of Disaster Preparedness

Disaster preparedness is typically understood as consisting of measures that enable different units of analysis—individuals, households, organizations, communities, and societies—to respond effectively and recover more quickly when disasters strike. Preparedness efforts also aim at ensuring that the resources necessary for responding effectively in the event of a disaster are in place, and that those faced with having to respond know how to use those resources. The activities that are commonly associated with disaster preparedness include developing planning processes to ensure readiness; formulating disaster plans; stockpiling resources necessary for effective response; and developing skills and competencies to ensure effective performance of disaster-related tasks (Waugh, 2000).

The concept of disaster preparedness encompasses measures aimed at enhancing life safety when a disaster occurs, such as protective actions during an earthquake, hazardous materials spill, or terrorist attack. It also includes actions designed to enhance the ability to undertake emergency actions in order to protect property and contain disaster damage

and disruption, as well as the ability to engage in post-disaster restoration and early recovery activities. Preparedness is commonly viewed as consisting of activities aimed at improving response activities and coping capabilities. However, emphasis is increasingly being placed on recovery preparedness—that is, on planning not only in order to respond effectively during and immediately after disasters but also in order to successfully navigate challenges associated with short- and longer-term recovery (Waugh, 2000).

2.4 Safety standards required for schools

Various approaches are used in enhancing school safety in the United States of America. School wide policies and practices are effected to systematically address needs of students, school personnel, the community and the physical plants of the school. The United States Department of Education (U.S.D.E) requires safety policies in schools to be strictly enforced in view of the threats posed by terrorism, drug related violence, proliferation of firearms and natural disasters like typhoons floods and hurricanes. Most American public schools have zero-tolerance policies on activities that are likely to compromise safety.

A school survey on crime and safety (S.S.O.C.S) report states that in the 1996/1997 school year, 90% of the schools reported zero-tolerance policies for firearms. In the same period of time, schools implemented a number of approaches to enhance safety and security. Ninety six percent of public schools required visitors to sign in before entering into the school plant. Eighty percent of public schools had a closed school policy that prohibited students from leaving school premises except at specified times. Six percent of

schools had policemen or other law enforcement personnel stationed thirty hours a week or more at the school in a typical week (United States Department of Education, 2004).

Cavanagh (2004) in a report on schools' responses to the threat of terrorism states that the implementation of school safety and security policies in European countries has been greatly influenced by school tragedies and near misses. The September, 2004 school hostage crisis which led to the massacre of 320 children, teachers and parents at School Number One in Beslan, Russia led to the provision of armed military personnel to guard schools. This was done to prevent future terror attacks on schools.

Cavanagh (2004) further states that since the 1993 school hostage crisis in the French City of Neuilly-Sur-Seine, police authorities regularly coordinate security with school officials. Police and school officials meet at the beginning of each term to work out security details of schools. In Paris, policemen are stationed in front of public schools to provide security, maintain the traffic flow and check suspicious activities. In a discussion on the role of schools in crime prevention, Soomeren (2002) states that school safety related work in the Netherlands has focused on the safety of premises, school capacity building, bullying and improved incidence response. The Amsterdam school safety project is a 5 year project involving 40 secondary schools. It uses school safety plans, physical improvements to the school and curriculum and social supports to promote an integrative, preventive approach to school safety in participating schools.

The partial or total lack of the implementation of school safety policies has been a cause of concern in both India and China. Reuters (2004) in a report documenting the Indian school fire of July 2004 blames the tragedy, in which 90 children died, on failure to fully implement safety norms. The school building in this case was overcrowded and had only one exit. There were no emergency doors or fire fighting equipment. School tragedies in India, including the 1995 school fire, which led to the death of 400 students, are blamed on failure by Regulatory Authorities to enforce safety norms. For example, schools may stay for as long as three years without being inspected. In China, the 2001 school blast in which a storied building collapsed on school children was blamed on selective implementation of safety policies.

According to CERNET (2004) various regulations governing safety in schools have since been strengthened. These include the Law on the protection of minors, the Law on Compulsory Education and the Teachers' Law. Some Chinese schools have had to cancel activities like gymnastics to reduce death and injury associated with the rigours of physical education. Chinese schools are required by law to take the responsibility for managing and protecting students in their premises. Consequently, they are required by law to buy liability accident insurances to compensate death and injuries that occur in the school premises.

In South Africa, levels of school violence are extremely high. Shaw (2002) in a paper on international experiences and actions in promoting school safety states that there are regular reports of serious violence, gang activity, rape and sexual assaults on girls in schools. Current approaches on enhancing school safety include exemplary programs

such as “Tiisa Thuto”, “Crisp” and “Cass”. Non-governmental organizations such as the Independent Project Trust (I.P.T) and Business Against Crime also play a role. “Tiisa Thuto” project involves developing partnerships between schools, parents, local businesses and community organizations in implementing model programs that address the needs of the individual schools.

The “Crisp” project organizes school safety teams to link parents, schools, local organizations and police. In the 1990s I.P.T developed a policy which provided conflict resolution training to students, teachers and school governing bodies. However, continued safety problems led to the realization that a more fundamental approach was required. Thus the “Cass” program was consequently initiated. This is a comprehensive model involving local community partners, National government development guidelines and support material for school managers, educators and safety committees. In a research paper addressing school safety in Uganda, Lulua (2008) states that development partners like the national government, district government, communities, parents and private sector partners have tried to respond to the infrastructural aspects of educational quality, but safety of the learning environment has not been adequately addressed. A quality school is defined as a school that is safe, healthy and with a friendly environment without violence and hostility, drug free and well equipped facilities. Uganda has implemented the safe schools contract (S.S.C) as one of the identified interventions which strengthens the roles of teachers, pupils, parents and their involvement in children’s education to enhance quality learning.

The Ugandan Ministry of Education and Sports and USAID introduced more than 200 schools to S.S.C by 2008 so as to enhance safety in schools. Stake holders identify issues; define safety, the consequences of not having a safe environment for pupils and ways to improve safety of children. They then discuss and agree on how to implement it. Through the experiences in the 200 supported schools, S.S.C offers a feasible mechanism, for promoting safety in schools through strengthening school-community partnerships and child participation (Lulua, 2008)

In Kenya, among the chilling memories was that of 1991 raid by boys on the girls' dormitory at St. Kizito Secondary School in Meru District that resulted in raping of 71 teenage girls and death of 19 girls (Simatwa, 2007). In 1993, armed gangsters stormed Hawinga Girls Secondary School. The school had no perimeter fencing making it easier for the gangsters to access the school and rape students (Oriang, 2001). Gicheru (1998) states that overcrowding was one of the factors that contributed to the death of 27 girls in the 1998 Bombolulu Girls dormitory fire. Odalo (2001) stated that the absence of fire fighting equipment and emergency exits led to the high death toll during the Kyanguli Secondary School fire. Sixty eight boys lost their lives in this incident.

In 2010, two boys were burnt to death in their sleeping quarters at Endarasa Boys Secondary School dormitory fire in Nyeri County .It is unfortunate that the school fires were on the rise in the year 2012 .In July 2012, fire razed down a dormitory in Joran secondary school in Ngong.On 23rd August 2012, eight pupils perished in a dormitory inferno at Asumbi girls boarding in Homa Bay County. On 9th October 2012, a similar fire incident gutted down a dormitory at Giakanja Secondary in Nyeri County although

no injury was reported, on 17th September 2012, a fire gutted down a dormitory at Maranda High School, Siaya County and destroying property of unknown value. On 14th October five students and the caretaker perished in a dormitory inferno at densely populated Le Pic private secondary school in Nairobi which is said to be having the primary section together(Oduor, 2012;Ombati,2012).

The existence of policy guidelines on school safety has not stopped the incidences of injury, death and loss of property in Kenyan public schools. Most schools were found not to have complied with safety policies. The schools were ordered to remove grilles from dormitory windows to protect students during disasters. It was recommended that school managers should beef up security by employing an adequate number of watchmen (Savula and Atsiaya, 2004). School safety policies in Kenya as indicated in the Ministry of Education Circular No. G9/1/169 (Republic of Kenya, 2001) includes requirements that:

(i) Head teachers should reside in schools.

(ii) Fire drills should be held at least twice every year.

(iii) Emergency doors should be created in dormitories and special rooms.

(iv) Safety instructions should be prominently displayed in laboratories and workshops.

(v) Dormitory windows should open outwards and be without grilles.

(vi) Dormitories should have double doors opening outwards.

(vii) Fire fighting equipment should be provided.

(viii) Regular painting and white washing of buildings

(ix) Involvement of registered professionals in site planning, design, construction and maintenance of school buildings.

(x) Regular health inspection of premises and students.

(xi) Prevention of overcrowding in classrooms and dormitories.

(xii) Classrooms should be built upwind from laboratories, kitchens and play grounds and their longer sides to run in an east to west direction.

(xiii) One toilet to be provided for every thirty students and wholesome water to be provided for consumption by students.

(xiv) Clearly demarcated school grounds with proper fencing and secure gates.

According to Kay (2003) all kinds of trash should be discarded properly as they tend to quickly catch fire. According to Explosive Act [Cap 115] inflammable substances such as petroleum, paint, chemicals etc should be stored in tightly closed cans or containers and away from any source of heat. They should never be stored in classrooms and dormitories. The use of hurricane lamps in the dormitories should be properly regulated.

According to Ministry of Education (2001) an electrician should regularly check the electrical wiring and replace any that is weak, broken or worn out and students should not carry or play with matches as they can result in clothing or other items catching fire. Alberta Learning Special Education Board (1999) notes that, teachers should sensitise students about the dangers of fire through the related sections in the curriculum.

According to Alberta Learning Special Education Board (1999) schools should invite the local fire department to give talks and demonstrations to learners about fire prevention in a school context. Students and staff should undertake periodic fire drills, at least twice a term. The students should leave the room immediately, without creating any panic rush. Students should also be advised to crawl on the floor when going through a smoky area or room as smoke and heated gases tend to rise and so they will be thinnest near the floor. Doors that feel hot should not be opened as the fire on the other side could be blazing fiercely or one could get killed by the burst of heat and smoke when the door is opened. One should not run in clothes that are on fire. Running helps to fan and spread the flames. Instead, one should roll on the floor to smother the flames. Students should not return to the classroom or dormitory or any other building. After they have escaped, the Fire Department or the relevant authorities should be called. Fire extinguishers should on the other hand be located in strategic places in the school.

According to Ministry of Education (2008) the specific functions of this committee are to identify the safety needs of the school with a view to taking the necessary action; mobilise resources required by the school to ensure a safe, secure and caring environment for students, 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 and constantly review issues of child safety in and around the school. Therefore

the absences of this sub-committee means that school administration have failed in responsibilities to promote disaster awareness and preparedness.

According to Ministry of Education (2008) it is important to note that not all disasters are rapid or sudden. Some disasters develop over time and there is usually a lead time to receive information and react to early warnings. Careful monitoring and early warning are useful only if they help to avert potentially dangerous events or circumstances that can lead to emergency or disaster or if they lead to actions taken to minimise damage. The purpose of monitoring and early warning is to enable remedial measures to be initiated and to provide more timely and effective relief through disaster and emergency preparedness actions. Early-warning mechanisms will provide the school community and other stakeholders with relevant information to enable them make informed decisions for evacuation or relocation.

Safety Standards Manual for Schools in Kenya states that the School management/board should create mechanisms and procedures that ensure stakeholders are conversant with measures needed to prevent occurrence of disasters and steps required to reduce the impact. It further stipulates succinctly that, regular spot checks by the teachers and the administration should be undertaken before learners retire to bed (Ministry of Education, 2008).

According to Ministry of Education (2001) an accurate roll call should be taken every day and records well maintained. According to Ministry of Education (2008) there should be regular patrols by the school security personnel or any other authorized security personnel. No visitor should be allowed in the dormitory. Kay (2003) affirms that, inspection of hygiene standards of the dormitories and the learners on alternate days of the week would be impeccable.

According to Kay (2003) in case sections of the route to school are flooded, students should not attempt to wade through floodwater on their own. After the onset of floods, school authorities also should ensure all the electrical lights, sockets and appliances are carefully checked by a qualified electrician before they are used. School authorities are also required to ensure that drinking water is boiled at all times. The school should further have all the physical structures like classrooms, toilets, dormitories, and administrative block checked by competent authorities before they are declared safe for use by learners and staff.

Kay (2003) further avows that, during heavy rains, schools in landslide-prone areas should be on the lookout for signs of unusual land movement. On detection of unusual land movement, alternative learning facilities should be used until the threat ends. Rapid evacuation measures should be implemented when a landslide takes place. According to Ministry of Education (2008) during thunderstorms, students should remain in the school and stay in-doors. Students should also be seated inside school buildings. No one should take shelter in the verandahs or open places. Student should further be warned that during

thunderstorms, they should never take shelter under trees or walk in the rain. In areas prone to thunderstorms and lightning, school authorities should install lightning arresters.

According to Ministry of Education (2008) when learners are inside the classroom and an earthquake occurs, they should take cover under desks or tables. They should not panic or attempt to rush outside or near windows. Where evacuation is necessary students should have clearly stated (standing) procedures on how to move out of the buildings. If students are in the open and an earthquake occurs, they should move away from buildings because they can be struck by falling building materials and other rubble.

According to Ministry of Education (2008) if students are inside a classroom, the windows should be closed immediately. They should also stay away from the windows. Students should be advised to seek shelter under a desk or table. In open grounds, students should lie flat on the ground or in trenches. According to Redican, Olsen, Baffi, (1993) teachers should sensitize students about the dangers of poisonous chemical emission/severe pollution through the related sections in the curriculum. If poisonous gas or chemical leakages/emissions that are likely to pose a threat to students and staff occur, school authorities should be notified immediately. Once notified, school authorities should immediately contact relevant experts on gas or chemical risks. School authorities should then quickly implement evacuation plans for all persons in the school. For affected individuals, school authorities should seek immediate emergency treatment at the nearest medical facility.

According to Ministry of Education (2008) schools should ensure that learners are conversant with the basic road safety rules as pedestrians, or passengers in public service vehicles in order to minimise traffic accidents. According to Ministry of Education (2008) students should walk on the sidewalks or a distance away from the street or road. Students should also always walk in the direction of oncoming traffic; should be trained to obey traffic lights and look in both directions before crossing a road or chasing a ball or any item on the road; should cross the roads only at designated places, such as zebra crossing, footbridges or tunnels; schools should seek the assistance of the local authorities in erecting bumps on roads near the school to slow down traffic flow and that students should never play on the roads or close to the roads.

Ministry of Education (2008) and Lucia (2003) adds that it is also the responsibility of every learner using a bicycle to ensure it is in good condition and is well maintained. Parents/guardians need to ensure that their children's bicycles are in good condition. A bicycle should have reflectors and lights and students should never attempt any stunts while riding a bicycle. Students should further obey traffic signs and signals; bicycles should be ridden in the same direction as the flow of the motor traffic; students riding bicycles should never hold on to moving motor vehicles for assistance; school Management Committees/Board of Governors should liaise with respective local authorities to vet *boda boda* riders and motor cyclists who provide transport for children; students should follow regular routes to and from school, especially when the mode of transport is a *boda boda*/motorcycle and parents should monitor and regularly ensure that this requirement is observed and know the people who provide their children's transport.

When using public transport, students should ensure that they are seated and should fasten seat belts when using ‘matatus’ or other public service vehicles. They should also not stick out their heads or hands when inside a motor vehicle and should not board or alight from a moving public service vehicle. Students are also advised to refuse food/drinks, money, gifts or similar inducements from motorists and other strangers. The students should be sensitised and instructed on safety measures to take in the event of an accident.

Schieber and Sacks (2001) affirm that, wearing a bicycle helmet is an important countermeasure against road traffic injuries, since it reduces the risk of serious head injury by up to 85% and brain injury by 88%.This finding concurs with transport research centre report that the increasing use of helmets, enforcement of speed limits, use of reflective clothing’s has the potential to prevent large number of death (Transport Research Centre, 2006).

According to Kaufman et al (1999) Physical facilities include structures such as classrooms, offices, toilets, dormitories, libraries, laboratories, kitchen, water tanks, playground equipment, among others. These facilities can be either permanent or temporary structures. Such physical structures should be appropriate, adequate and properly located, devoid of any risks to users or to those around them. They should also comply with the provisions of the Education Act [Cap 211], Public Health Act [Cap 242]) and Ministry of Public Works building regulations/standard .The study sought to establish the extent to which these school physical facilities have met disaster

preparedness requirements. To achieve this, the researcher conducted observation and took measurement of various physical facilities in the purposively selected schools to certain their conformity with the Ministry of Education requirements. The results are discussed in chapter four.

According to Ministry of Education (2008) the size of the classroom, in terms of length and width, should be as specified in the Ministry of Education building specifications i.e. 7.5m x 5.85m or 7.5m x 6.0m. Such classrooms should accommodate a maximum of 30 learners in one-seater desks or 40 learners in two-seater desks in line with the provisions of the Ministry of Education circular on Health and Safety Standards in Educational Institutions (2001)**.** According to Ministry of Education (2008) stairways should be wide enough and located at both ends of the building and should be clear of any obstructions at all times. The construction of stairways should give provision for learners with special needs/disabilities. The handrails in the stairs should be strong and firmly fixed. According to Ministry of Education (2008) corridors should be both well ventilated and lit. The width should be wide enough for the learners to walk along without bumping into each other.

According Aluanga (2009) classroom windows must be without grills and should be easy to open. According to Ministry of Education (2008) classrooms should be properly lit and ventilated. The floors should be level and kept clean always. For cemented floors, any cracks should be repaired in good time. Similarly, for mud walls and floors teachers should ensure that they are regularly smeared with fresh mud and floors smeared with

cow dung to prevent the development of cracks and the generation of dust that can pose risks to the health of both teachers and learners. In all cases, efforts should be made to cement all the classroom floors. Each block should also be fitted with serviced fire extinguishers. The furniture in classrooms, especially the desks, should be appropriate for use by both male and female learners. Poorly constructed or inappropriate desks can lead to physical deformities such as curvature of spine, contraction of chest, roundness of shoulders or a confirmed stoop. They can also create tension and fatigue among learners. The class teacher should ensure that the desks are arranged in a manner that facilitates easy and orderly movement of students in the classroom—ideally each desk should have no more than 3 students and the space between any two desks should be at least 2 feet. The positioning of electrical sockets should be beyond the reach of young students in order to avoid tampering and buildings housing classrooms should be accessible by special needs students.

According to Organization for Economic Co-operation and Development (OECD, 2004) in boarding schools, dormitories are the single most used physical infrastructure, where learners spend the longest continuous period of time in a day. It is therefore important to keep these structures clean and properly ventilated. The space between the beds should be at least 1.2 meters while the corridor or pathway space should not be less than 2 meters. 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.

According to Ministry of Education (2008) each dormitory should have a door at each end and an additional emergency exit at the middle. It should be clearly labelled "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.

According to Redican, Olsen, & Baffi, (1993) in cases where pit toilets are used these structures should be built at least 10 metres away from tuition and boarding facilities and on the downwind side. This is contrary to the safety required. Safety standards as according to Redican, Olsen, & Baffi, (1993) where ablution block is attached to the dormitory, a high degree of cleanliness must be maintained. Pit latrines should also not be less than 6 meters (20ft) deep, and should be regularly well disinfected and should be at least 15 meters (50 ft) away from a borehole or well or water supply point. Where there are boreholes or shallow wells in places with difficult soil types or land forms, the school management should seek the advice of the water department before the digging of a pit latrine.

It is required that in mixed schools, girls' sanitation areas must be separate and offer complete privacy; each school should ensure safe and effective disposal of sanitary wear. In all schools, appropriate provisions should be given to learners with special needs and very young learners in pre-unit and lower primary. For example, passageways should be

accessible and toilet facilities should be suitable for use by special needs learners and very young school children. All sanitary facilities and equipment should further be in the best state of repair, serviceable and inspected regularly. If learners are responsible for cleaning their sanitation facilities, proper protective measures (e.g. provision of gloves) must be taken. Soap and tap water or water cans fitted with taps should be set outside the toilets for washing hands after use of these facilities.

According to Asian Disaster Management News (2008) a library that meets safety standards should be rightly located in a quiet place and should have sufficient space in addition to being well ventilated and safe from invasion by destructive insects and pests. Should also have adequate ventilation and lighting; have wide alleys of passageways to facilitate evacuation; have spacious room for easy movement; dusting books done regularly, preferably every three days and have properly reinforced and well spaced bookshelves**.**

According to Kaufman et al (1999) an ideal school administration block should put into consideration the prevailing security situation of the school environment and the needs of the school. There should be provisions of offices for key school personnel such as the head teacher and deputy head teacher, senior teacher, bursar and the supporting secretarial staff. In addition, the school should have a staff room and registry. It should be centrally located and not far from classrooms. The doors and windows should be burglar proof. Each administration block, like any other block, should have a fire extinguisher. Provisions should be made to acquire fire-proof cabinets for the storage of essential

office materials and documents. There should be provisions for easy access to legal and administrative documents such as the Educational Act, the Children's Act, Sexual Offences Act, the Public Health Act, Code of Regulations, school rules and any other documents accorded importance by the school authorities.

Overall, the achievement of the right infrastructure in schools requires the collective efforts of different stakeholders. Nonetheless, the following guidelines would be necessary: No physical infrastructure should be constructed or occupied without consultations with and approval of the Ministry of Public Works, Ministry of Education, and Ministry of Health (Public Health Department). There should be close and cordial working relationship between the school, parents, sponsors and members of the community with regard to construction, utilisation and maintenance of the school buildings. A school site plan should be developed and be available at all times (Ministry of Education, 2005).

According to Redican, Olsen, & Baffi (1993) vehicles should be comprehensively insured and regularly serviced and maintained. School bus/vehicle should also be fitted with appropriate seats and seatbelts and driven at a required speed. There is also a requirement that the driver and his/her assistant must have the necessary PSV qualifications, a valid driving licence, experience and a certificate of good conduct. The school bus/vehicle must also be fitted with appropriate seats and seatbelts; have a First Aid kit and that the assistant shall be responsible for ensuring proper behaviour of the

learners, assist them in boarding and alighting from the bus and ensure proper sitting arrangements.

The school bus/vehicle should clearly display on the outside the name, address and telephone number of the school and at all times be driven at not more than 60km/hr, hence must have speed governors. The speed limit within the school compound for any motorised vehicle should be 5km/hr and for any school excursions or field trips, the parents should give their consent in writing and an accompanying teacher is mandatory. School administrators should ensure that Ministry of Education guidelines on school travel for students are strictly adhered to.

2.5 Significance of Disaster Awareness and Preparedness in Secondary Schools

Disaster awareness and preparedness in secondary schools lead to; reduced risk of losing property, reduced chances of death, reduced personal injuries, increased institutional resilience to adverse condition and minimal interruption of learning in schools. Many secondary schools may be lacking disaster awareness and preparedness and this study aims to establish the need for this important adventure. Disaster prevention projects may add other additional effects like flood protection structure can also yield additional benefits such as provision of irrigation or drinking water and electricity (Mechler, 2005).

2.6 Factors influencing Disaster Preparedness and Response

"We must, above all, shift from a culture of reaction to a culture of prevention. Prevention is not only more humane than cure; it is also much cheaper.... Above all, let

us not forget that disaster prevention is a moral imperative, no less than reducing the risks of war."

-Kofi Annan, Former Secretary General of the United Nations (Strategy for a Safer World in the 21st Century: Disaster and Risk Reduction, Geneva, July 9, 1999)

The behaviour and response of people and the community to disaster is very paramount in the planning of emergencies and disaster, as well as the collaboration and teamwork in handling the "after shock" of these disasters for a vigorous and efficient recovery. Positive attitude, behaviour, response in an organization is needed for competent, efficient and well organized plan for preparing for future emergencies and disasters (Bradan, 1997;Muasya, 2008).

Some factors influence people's behaviour and response to disaster preparedness. These factors may be categorized as socio-demographic factors that describe the qualities, characteristics and composition of the community where these people belong. Language barrier is one of the factors that may influence disaster preparedness and response. Communication is an important tool in dealing with various issues that concern us in our daily lives. Language barrier and difficulties in a community may cause misunderstanding and this may cause misunderstanding of the team (Luhtans, 2002).

2.7 Causes of Disasters in Secondary Schools in Kenya

Disaster profile of Kenya is dominated by terrorism, fires, strong winds, famine, floods, tribal skirmishes, road accidents, epidemic of communicable and non communicable diseases. Food poisoning has been reported severally in Makueni, Kitui and Machakos

due to consumption of poisonous cassava and contaminated grains containing afflatoxin. This came more pronounced during the period of food shortage in 2004 where 123 people died and 333 were affected. In 2005, industrial alcohol poisoning was reported in Machakos thereby killing 53 people. Diseases such as AIDs was declared a national disaster since 1999 but has continued to claim lives as depicted in Kenya AIDS indicator survey (KAIS) of 2005, where 1.5 million Kenyans are infected with approximately 150,000 deaths annually. The students are not spared from these disasters (KAIS, 2005; Sharif, 2005).

According to Integrated Regional Information Network (IRIN, 2010) Kenya's failure to put in place a comprehensive disaster preparedness policy means its response to high-risk events such as droughts, floods, epidemics and major accidents tends to be slow, poorly coordinated and unnecessarily expensive .KAIS of (2007) indicate National HIV prevalence as to be an estimated to be 7.1% among adults aged 15 - 64 years. Women were more likely to be infected (8.4%) than men (5.4%), and young women aged 15-24 years were four times more likely to be infected (5.6%) than young men of the same age group (1.4%). The overall HIV prevalence in adults aged 50-64 was 5.0%. Significant differences in HIV prevalence were found across provinces. HIV prevalence among adults aged 15-64 years in urban areas was 8.4% and in rural areas was 6.7%. An estimated 1,027,000 adults living with HIV in Kenya resided in rural areas, and 390,000 lived in urban areas. Of all HIV infected adults aged 15-64 years, over half (51.4%) lived in Nyanza and Rift Valley provinces. Homa Bay County is found in Nyanza province and therefore it faces this challenge.

Road traffic injuries are one of the leading causes of death and disability worldwide. Statistics reveal that they account for more than 1.2 million deaths-3.6 % of the global mortality. In Kenya, road carnage has also led to loss of students' life and others have become maimed. Students are bound to travel in either school transport or public transport when they go for holidays or when they go for educational tours. According to Kenya traffic police department report 69% of the vehicles over speed. A significant proportion of vehicles travel as much as 20 to 30 km/hr above the normal speed limit leading to loss of students lives (Abdulgafoor et al, 2012; World Health Organization, 2009).

A study on identification and causes of disasters phenomena in schools by United Nation Development Programme in Kenya secondary schools, poorly designed schools, floods, diseases like; AIDs /HIV, cholera, riots and fire breaks are noted to be the main problems. It further vividly, stated that, available resources and facilities in schools were insufficient to reduce the disaster, such that when the disaster strike, the school principals and stakeholders of the school cannot deploy preventive measures if not pre-disaster planning and preparedness (UNDP, 2008).

The school administrators can create conducive learning environment by setting clear rules and procedures; thus school policy takes an important role in safety procedures. There should be no room for school insecurity that allows for muggings, robbery, carjacking and kidnapping which at times lead to loss of lives and injuries. Majority of Kenyan secondary schools and colleges are not new. Design requirements may have

changed since they were constructed. This has made some of secondary schools in Kenya to be vulnerable to disaster (Day & Golench, 1995).

A well thought out work environment engineering is an essential ingredient in reducing or eliminating the likely causes of safety hazards in an organization the design of lecture halls, offices, dormitories, classrooms, laboratories, electricity and workshop must take into account the safety in an organization. Students and workers should be induced on safety measures (Okumbe , 2001;Ngaroga 2010).

2.8 Challenges Faced in Designing and Construction of School Buildings Resistant to All Types of Disasters

Providing safe environment for learning should be a primary concern of any school community. Buildings in schools house vital documents such as institutional confidential documents, certificates, examination scripts, office equipment, books, workshop machinery (including gas cylinders) and laboratory chemicals. Kumba (2008) contends that most secondary schools in Kenya do not have elaborate systems for early warning and hence not disaster prepared. His contentions concur with Petal (2008) finding, where they noted that the buildings in some schools are not constructed properly to resist disasters.

A study in two Nigerian states found that over 80% of classrooms in Enugu and 50% in Kaduna had leaking roofs, poor sanitation hence creating a fertile ground for disaster. When buildings in schools affected, it means the school community day to day life or operation is also affected. It is difficult to salvage student's personal effects including

bedding, clothing and books from a building burning down or that has collapsed. This has a further ripple effect on loss of time, shelter labour to the school community (UNESCO, 2010).

Kenyan building construction programmes are usually linked to preventing disaster and to meet the needs of special people in the society such as visually impaired and physically challenged. In practice, these are rarely seen as matters of priority and even when the risk is considered and reflected in new design. The implementation of the suggested precautions has remained elusive in most cases. Secondary schools in Kenya are vulnerable to disasters and this is asserted by other contributing factors such as, financial shortages and lack of design skills. Perhaps equally important, if not more so, is the statuesque of Kenya educational institutions in terms of disaster awareness and preparedness (Ndirangu, Ocharo, & Njoka,2006).

Architectural designs reflect the purpose that building is to serve; in turn, the design influences activities within a building, and how will interact with surrounding activities and buildings. School architectural style and suites makes school stand out among buildings besides indication their functions. The school administration block, classrooms, laboratories and toilets should be built according to the ministry of education specification. Priority should be given in building regulations to provide an adequate means of escape, stairways, corridors exits and Limiting use of combustible materials. In Australia, all government schools are fitted with smoke detection systems connected by automatic telephone link to regional fire stations (“An architectural revolution,”1990).

2.9 Measures of Curbing Disaster in Kenyan Secondary Schools

The measures to curb disaster in secondary schools in Kenya have been there in papers but not into practice**.** According to the education director circular Ref. No. 79/1/169 dated 10th April 2001, there have been many incidents of fire and other health risk situation in educational institutions. This is attributed this to provision of sub standard facilities in schools. The government has laws and by laws, which specify the safety health standards and ways of safe guarding these standards in The National Disaster Management Policy Legal Framework of 2004 is Available in Various legislative Acts Such As: The Explosive Act [Cap 115]; The Water Act[Cap 372];The National Police Act [Cap 84];The Pharmacy and Poisons Act [Cap 244]; The Food, Drugs and Chemical Substances Act [Cap 254; and The Preservation of Pubic Security Act [Cap 57].

The Education Act[Cap 211], part V section 18 and 19 deals with inspection and control of schools, for instance, workshops, dormitories, kitchen, Santeria, hostels, ancillary buildings and other building on the site of the school. In section 19, states that the ministry may make regulations with respect to conduct and management of school and such regulations may prescribe minimum standards fire the health and safety of the students and for satisfactory environment for education. The public health Act Cap [242] section 124 deal with demolition of unfit dwellings, section 125 stipulates the duty of the medical departments as to demolish any overcrowding, bad or insufficient housing in various districts in Kenya. Carry out a research and publish the findings of which they rarely do (Rowan, 2001).

Ogutu (2008) while examining the school infrastructure in relation to school safety in Bondo District where multi stage random sampling was used to obtain a sample of 572 students from different schools in 6 different divisions and questionnaires were used to obtain data revealed that though school infrastructure play important roles in determines school safety, the study fails to show how schools have adhered to the required safety standards. In this study data was obtained using only one instrument. In the current study more than one instrument is used.

Kavuludi (2009) conducted a study on the safety of the school environment in public primary schools in Vihiga District. The sample consists of 300 students in the age range of 12-15 years, selected by stratified sampling method from various schools. School environment was measured with the help of 'School Environment Scale' (Mishra, 1984). All the six sub-scales of school environment have significant effect on school safety. The scores on school safety differed significantly in case of school type and size. In type of schools the difference was significant on levels of disaster preparedness mostly due to availability of resources; financial, physical and human resource.

Rasiah (2011) carried out a study on disaster preparedness in public secondary schools in Isiolo District. A sample survey with a cross-sectional design was carried out. It covered 1742 form four students from 25 secondary schools in the district. Schools were selected randomly by location. Data were collected using questionnaires and analyzed using descriptive statistics and the regression techniques to estimate the levels of disaster

awareness and preparedness. The results showed that most public secondary schools in Isiolo District are yet to put in place measures to ensure disaster preparedness.

Wasike (2010) conducted a study to understand the work line of a principal in relation to disaster awareness and preparedness in Bungoma District. The study used only questionnaires to collect data. The study examined the relationship between the time principals' leadership strategies and time spent on different activities that promote disaster awareness. The study established that time spent on organizations management activities associated with disaster awareness were inadequate. The current study examined teachers' role in the promotion of disaster awareness and preparedness which Wasike's study did not look into.

Njoroge (2008) carried out a study on relationship between school inspectors, school characteristics and school disaster awareness and preparedness. The researcher conducted interviews and surveys with school inspectors and gave insight into how school inspectors implement the supervision act and how they assess schools and stimulate schools to improve on school safety. The results of the study showed that all schools started to improve on school safety after a school visit. Further they noted that the innovation capacity of the school towards disaster awareness and preparedness do not seem to contribute to school improvement after school inspections. No effects were found on school safety improvement processes of the number of scores that schools received from inspectors, the extent of feedback and suggestion for improvement after school inspections.

This concurs with Mishra (1984) who posits that Inspector to monitor the learning environment on regular basis through physical inspection of physical facilities, learning resources and quality and adequacy of teachers. Although head teachers and heads of departments are the first inspectors in a school, a second opinion from appointed inspectors is essential for quality assurance. This study was a case study and used qualitative paradigm. The current study utilized descriptive research design to establish school disaster awareness and preparedness and it has looked at the whole county rather than focusing in a district. Njoroge (2008)

Nduku (2008) carried out a study on school disaster awareness and prepared in public secondary schools in Nyandarua District where the respondents of the study comprised of 54 teachers and 120 students. Data collected on the study were analysed using a stepwise multiple regression analysis. The results revealed that the levels of disaster awareness and preparedness were less than satisfactory. Teacher's levels of awareness were found to be key determinants of students' levels of awareness meaning that students get such knowledge from teachers.

2.10 Government Response towards Disaster Awareness and Preparedness in Kenyan Secondary Schools

The repetitive nature of both man made and natural disasters in the 25 years ago suggests that, despite the legal institution and policy framework, both government and local communities are not adequately prepared for disaster prevention. The new constitution has brought the idea of counties that has complicated the areas of jurisdiction by various

authorities .The new boundaries are being drawn. This leaves certain areas at higher risk of experiencing disasters as one would claim it's not within my sphere of operation, and it is likely that these programs of disaster awareness and preparedness have not been devolved and adequately implemented at local communities' level. The most worrying aspect in Kenya is that, the society has adopted a reactive approach rather than proactive approach to the problems related to disasters in rural and urban; formal and informal settlements (IRIN, 2010; Maingi, 2009).

For many years, the state machinery has been employing one common practice of handling emergencies and public out – cry situations such as death of students due to strikes, floods, diseases, hunger, accidents, fires and other related incidences. The practice has been establishing commissions. The tragedies of, saint Kizito, Bombolulu, and Nyeri high school are some of the cases where the Government appointed various educational commissions to investigate the matter (Mwaniki, 1999; Ndetei et al, 2004).

It is unfortunate for education stakeholders, that with such incidents of fire and other life risking situation in educational institutions, it takes a few weeks to mourn and forget all about it until the next incident. The government of Kenya is slowly adopting the proactive perspective to the problem where by former education minister Hon.Sammy Ongeri directed that all provincial secondary schools to be given between Ksh 150,000 and Ksh 350,000 each to purchase fire fighting equipment (Kumba, 2008).

2.10.1 Summary of the Literature Review

The review captured the concept of Disaster awareness, and concept of disaster Preparedness, Safety Standards Required for Schools that stipulated what every school should do to guarantee safety of the students. Research studies captured in the literatures concur that the level of disaster awareness and preparedness in secondary schools in Kenya is less than satisfactory. The current study was to validate this notion if it existed in secondary schools in Homa Bay County.

The literature acknowledges the government of Kenya effort in formulation national policy on disaster management. A goal that is yet to be reached as most schools have not only got the safety manual but the school principals are complaining of financial constraints that does not allow them plan for disaster management activities. The current study aimed at examining the Homa Bay County secondary schools principal's administrative strategies to combat disasters.

The review has unearthed the escalating variety of disasters in secondary schools ranging from flood, landslides, fire, strong winds, epidemics, food poisoning, road accidents to student unrest. The current study was to establish which type of disaster is common in Homa Bay County. Form the review there has been no study conducted to investigate disaster awareness and preparedness of secondary school in Homa Bay County. This study therefore aimed to fill the gap.

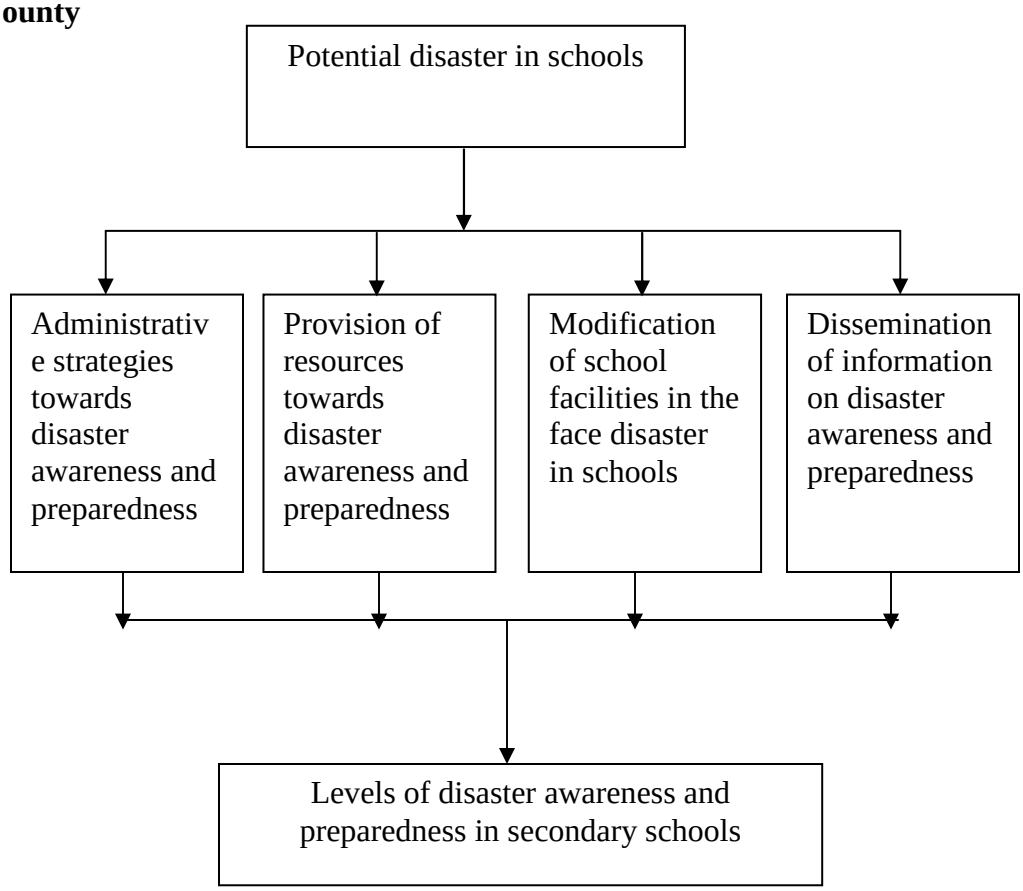
2.11 Theoretical Framework

This study is anchored on basic needs approach to planning theory. The approach suffices to bring out three vital folds namely: minimum requirements for private consumption such as adequate food, shelter, clothing, household, equipment and furniture. Essential community services such as safe water, sanitation, public transport and health education and lastly the citizen participation such as participation in decision making. In many developing countries, inadequate physical and material resources affect students' concentration, performance, and his/her entire life (ILO, 1976; Hopkins, 1977). Education planning is concerned with the problem of how to make the best use of the limited resources allocated to education in a view of the priorities. Disaster preparedness is a priority and Kenyan government can use the same approach to planning to minimize the disasters that has continued to rock the secondary schools.

2.12 Conceptual Framework

The conceptual framework indicates the input as potential disaster in schools which necessitate disaster awareness and preparedness. The process is depicted as operational planning involving a range of activities such as laying out administrative strategies and provision of resources towards disaster awareness and preparedness besides dissemination of information and modification of school facilities in the face of disaster .The output is shown as the levels disaster awareness and preparedness in secondary schools.

Figure 2.1: Disaster Awareness and Preparedness of Secondary School in Homa Bay County



Source: as perceived by researcher

The conceptual model indicates that schools are faced with a threat of potential disasters. In relation to basic needs approach to planning theory, schools should provide and meet minimum requirements. For any effective learning, the learning environments must be conducive by being safe. Safety is a basic need and secondary schools have to plan for school safety. The school facilities need to comply with the proposed school safety requirements as a way of meeting school minimum requirements. It would be also pertinent that school locomotives such as buses or vehicles be in good condition. Some of secondary schools have a boarding section, transport services or provision of meals

schemes. It would be imperative that the administrators plan on how to provide these vital services such as safe water, meals, sanitation and transport. Hopkins (1977) reiterates that financial constraints coupled with inadequate physical and material resources, affects student's concentration, performance and his/her entire life. It would be prudent if principals employ basic needs approach to planning in their school budgeting.

Maslow (1962) postulates that, all human beings have certain basic needs such as physiological needs, safety needs, love, esteem and self actualization needs. The role of the principal in school is to meet those basic needs of the school. The principal should not purchase a bus for the school if the students themselves do not have food or security. The students should not be taken out for educational tours when the basic needs are not met such as provision of shelter. This makes the role of the principal to remain both demanding and increasingly stressful .Principals who are unable to cope with the growing demands, results to stress and exhaustion. The solutions to entire principal problems lie in application basic approach to planning when it comes to school budgeting.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section dealt with the research methodology employed in the study .It has highlighted the research design, the target population, the sample size and sampling techniques, research instruments, validity and reliability of research instruments, data collection procedures and data analysis techniques to be used in the study.

3.2 Research Design

The researcher adapted descriptive survey design. The design was deemed fit for the study as it had the advantage of exploring the current level of disaster awareness and preparedness of secondary schools situations in Homa Bay County and thereby revealing summarised statistics by showing responses to all possible questionnaire items that lead to identifying needed changes (Bryman, 2008).The researcher used questionnaires and observation schedule as a combined approach to gather information on disaster awareness and preparedness of secondary schools in Homa Bay County.

3.3 Target Population

According to Krawthwohl (2004) target population refer to the total number of subjects or the total environment of interest to the researcher. The study targeted all secondary schools in Homa bay County. According to Homa Bay (County education office, 2010), there were 52 secondary schools in the County, 52 principals, 420 secondary school teachers and 6,000 secondary students.

3.4. Sample Size and Sampling Procedures

According to Crewswell (2005) there are several methods of sampling that can be used by the researcher however; researcher must be guided by the purpose of study and research questions to be studied. Studying an entire population is the ideal situation for any researcher but sometimes it may not be possible. The researcher purposively selected 52 principals and secondary schools for the study. All principals were involved in the study as they are key managers on day to day operations in schools. Williams (2003) posits that purposive sampling allows the researcher to select respondents who would give relevant information pertaining the phenomenon under study, ensures proper presentation of targeted population; intensify study of selected items besides increasing accuracy of results.

Due to large number of teachers and students, the researcher sampled them using simple random sampling. In simple random sampling, each member of the group has an equal and independent chance of being selected. To arrive at the sample size for teachers and students, the researcher used a guide for descriptive studies. According to Gay & Airasian, (2003) and Babbie (2005), the type of the research is a main determinant of the minimum sample a researcher should use. They cite 30% for co-relational, causal-comparative and true experimental research. For descriptive studies they give a guide of 10-20% of the population. The sample size for teachers and students this study were based on their proposals for descriptive survey. Using simple random sampling technique the researcher selected 20% of 420 teachers leading to a sample size of 84 teachers and 10% of 6000 students making a sample size of 600. The sample size for the study

therefore constituted 52 principals and schools, 84 teachers and 600 students. Leading to study sample size of 736 respondents.

3.5 Research Instruments

Two types of research instruments used were questionnaires and an observation schedule. The use of three sets of questionnaires enabled efficient use of time since information was collected from a large number of people that is principals, teachers and students. Keith (2009) adds that the use of questionnaires is flexible as the questions can be standardized. The researchers administered closed –ended questionnaire items to school principals, teachers and students. Closed-ended questionnaires are advantageous because they enabled eliciting specific responses (Davidson & Tolich, 2003; Kasomo, 2006). The questionnaires had two sections. Section A gathered demographic information. Section B gathered information on disaster awareness and preparedness based on research objectives.

Using more than one technique of data collection through a process of triangulation is seen as highly desirable as an overarching research strategy. The researcher used an observation schedule based on a check-list. This instrument was deemed fit for the study because it was able to complement the other approach of data collection through questionnaires. It helped synchronize the information obtained through questionnaires thereby enhanced the quality of evidence.(Ary, 2006; Crewswell, 2005).

3.5.1 Instrument Reliability

Denscombe (2007) postulates that reliability refers to the constituency of a particular measuring instrument yielding a similar result over a number of repeated trails. The researcher used test re-test method in two schools where the 2 principals, 8 teachers (4 from each school) and 10 students (5 from each school) were selected using simple random sampling technique for the pilot study. According to Mc Millam and Schmacher (2001), test re-test method involved administering the same instrument twice to the same respondents after a time lapse. The second administration of instruments was done after a time lapse of one week after the first test. The scores from both tests were correlated to indicate the reliability of the instruments. The results obtained in pretesting were calculated using Pearson's Product Moment Correlation Co-Efficient Formula. The reliability co-efficient (r) of Principals, teachers and students questionnaire yielded 0.88, 0.85 and 0.82 respectively. The researcher considered these values as showing a high consistency hence establishing the reliability of the instruments.

3.5.2 Instrument Validity

To improve the instrument validity, the researcher requested the supervisors from the University of Nairobi to assess the relevance of the questionnaire content. The recommendations were incorporated in the final questionnaires. Similarly, the researcher conducted a pre-test in two schools where the 2 principals, 8 teachers (4 from each school) and 10 students (5 from each school) were selected using simple random sampling technique for the pre-test study. Based on the analysis of the pre-test, the researcher made corrections, adjustments, and additions to the research instruments.

3.6 Data Collection Procedures

The researcher sought permission to conduct the study from the National Council for Science and Technology (NCST). The researcher then presented authorization letter to the County Commissioner and County Education Officer. The researcher then made appointment with the Principals of respective secondary schools. The researcher produced introduction letter to the school principals and explained the purpose of the study. The principals then introduced the researcher to their teachers and the students. After establishing a rapport, the researcher administered the research instruments in person. Ample time was given to the respondents to complete the questionnaires.

3.7 Data Analysis Techniques

According to Ary (2006) data analysis is a process of finding meaning in data. It involves sorting data, editing, coding, entry, cleaning, processing and result interpretation. The choice of data analysis procedures depends on how well the techniques are suited to the study. This study applied quantitative approach to process, analyzes and interpreted data

Quantitative analysis began with field editing. Data from both observation schedule and questionnaires were entered, cleaned or checked for any mistakes in entry, a process that was repeated for several times to make sure that there were no mistakes in data entry before transformation analysis and interpretation of data were done. This step according to Keith (2009) involves proof reading for errors. Since the study aimed at establishing the situation as it was, the data were mainly subjected to descriptive statistics

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents data presentation and interpretation of the findings based on the objectives of the study which are to identify the types of disasters found in secondary schools in Homa Bay County, establish levels of disaster awareness, establish levels of disaster preparedness, establish administrative strategies put in place by school managers to enhance disaster awareness and preparedness and to examine ways through which school facilities have been modified to cope with school disasters. The researcher used frequency counts to analyze the quantitative data, particularly frequency distribution tables were used to summarize and present data that was then internalized and described.. Frequencies and percentages obtained were presented in tables and figures which were then internalized and then described.

4.2 Instrument return rate

The researcher distributed questionnaire and also visited secondary schools in Homa Bay County for purposes of data collection. Although the researcher encountered a number of logistical challenges, the following responses emerged as indicated in Table 4.1.

Table 4.1: Instrument return rate

Respondents	Sample size	Response	Percent
Principals	52	48	92.3
Teachers	84	75	89.2
Students	600	500	83.3
Total	**736**	**623**	**88.2**

The results presented in Table 4.1 indicate that the researcher was able to obtain 93.7% responses from the purposively selected principals, 89.2% of teachers and 83.3% of students. The average return rate was 88.2% which the researcher considered to be an adequate representation of the target population.

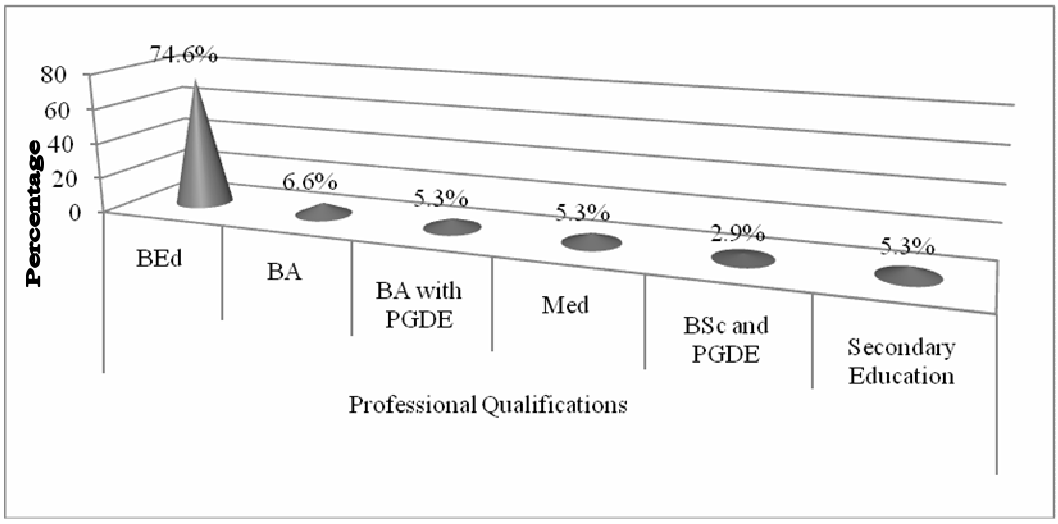
4.3 Demographic information

This section presents analysis of the demographic information of the schools and respondents sample for this study. This was aimed at establishing the characteristics of school and respondents in relation to disaster awareness and preparedness in secondary schools in Homa Bay County.

4.3.1 Teachers' highest professional qualifications

Teachers and principals were asked to indicate their highest professional qualifications on the questionnaires. The results are as presented in Figure 4.1.

Figure 4.1: Teachers' highest professional qualifications

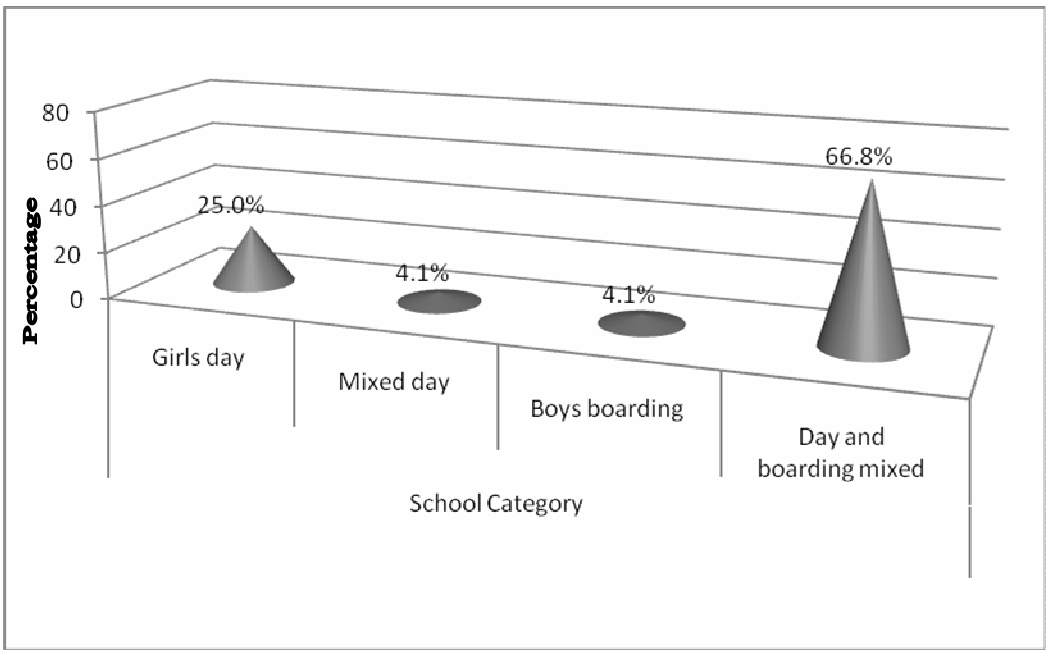


The findings in Figure 4.1 show that majority of teachers in secondary schools in Homa Bay County (74.6%) are holders of Bachelor of Education Arts. This is an indication that most secondary school teachers in the County have the required knowledge and skills in drills, conducting first aid in the course of their learning to participate effectively in disaster awareness and preparedness and also gave reliable information for this study .Grant (2000) postulate that learners should acquire disaster awareness and preparedness in learning institutions they attend.

4.3.2 School Type

The study also sought to establish the type of secondary schools from the principals. The results are as presented in Figure 4.2.

Figure 4.2: School type

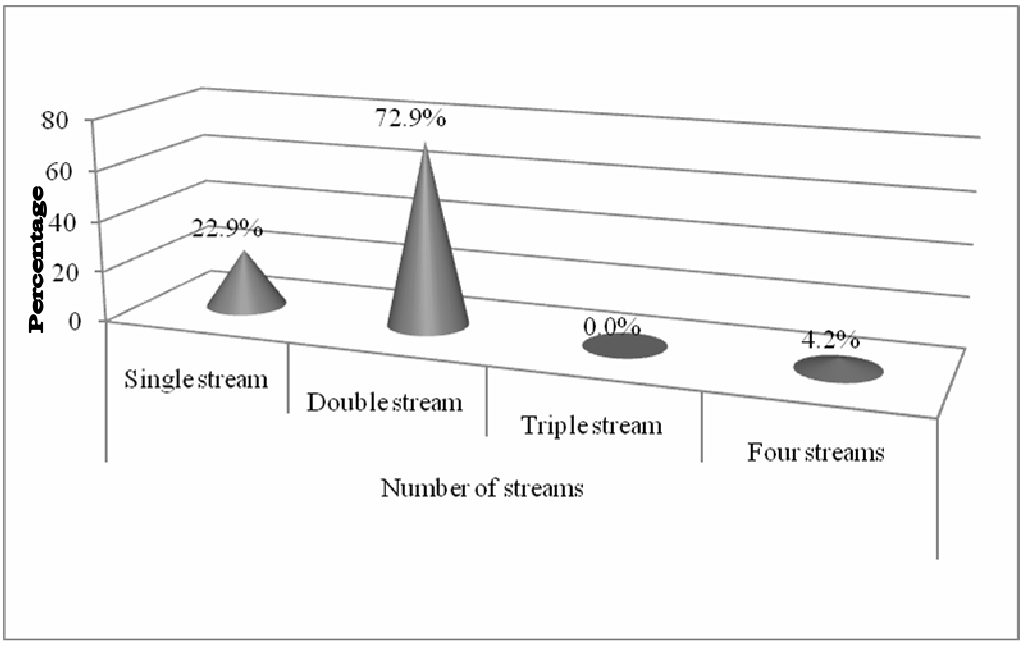


The results presented in Figure 4.2 reveal that majority of schools involved in this study (66.8%) were mixed day and boarding schools followed by 25.0% were girls day. This is an indication that most secondary schools in Homa Bay County have both tuition and boarding facilities and therefore are obliged to address disaster risk facing both day and boarding schools. Kaufman et al (1999) emphasizes that an ideal school should plan for disaster preparedness.

4.3.3 Number of streams

The study sought to establish the size of schools in Homa Bay County in terms of number of streams. The findings are as highlighted in Figure 4.3.

Figure 4.3: Number of streams



From the findings presented in Figure 4.3, majority 72.9% of secondary schools are double streamed followed by 22.9% were single stream. This is an indication that most secondary schools in Homa Bay County have larger student population. Gicheru (1998) stated that overcrowding was one of the factors that contributed to death of 27 girls in the 1998 Bombolulu girls' dormitory fire. It will be the duty of the principals to plan for the physical facilities so that we do not have overcrowding.

4.4 Types of disasters

Research question 1: What are the types of disasters facing secondary schools in Homa Bay County?

In order to assess disaster awareness and preparedness the study sought to find out types of disasters that affect secondary schools in Homa Bay County and the frequency of

occurrence. Quantitative data were analysed using frequency counts. The findings are as discussed in the successive sub-sections.

4.4.1 Types of disasters common in schools

The study sought to establish the types of disasters that face secondary schools in Homa County. The principals were asked to indicate type of disaster common in their school. The results are presented in Table 4.2.

Table 4.2: Types of disasters common in secondary schools
N = 48

Type of disaster	Frequency	Percentage
Fire related disasters	23	47.9
Rain-related disasters	41	85.4
School playground related disasters	14	29.1
Health/hygiene related disasters	24	50.0
Transport related disasters	17	35.4
Physical facility related disasters	22	45.8

The results presented in Table 4.2 indicate that majority of secondary schools in Homa Bay County (85.4%) are faced with rain related disasters such as floods, strong winds/storms and thunder and lightning. It was also noted that these schools are also faced with threats of other disasters such as health/hygiene related disasters (50.0%), physical facility related disasters (45.8%) and fire related disasters (47.9%). This is an indication that schools in this County are faced with a variety of disasters with varying magnitudes.

4.4.2 Rate of occurrence of Disasters

The researcher sought to establish the magnitude of disasters that face schools in the County. The principals indicated rate of occurrence of disasters in their schools. The findings are as presented in Table 4.3.

Table 4.3: Rate of occurrence of Disasters
N = 48

Type of Disaster	Response	F	%
Rain related disasters	Very frequent	26	54.1
	Frequent	16	33.3
	Rarely	6	12.6
	Never	0	0.0
	Total	**48**	**100.0**
Physical facility related disasters	Very frequent	12	25.0
	Frequent	16	33.3
	Rarely	8	16.7
	Never	12	25.0
	Total	**48**	**100.0**
Transport related disasters	Very frequent	9	18.7
	Frequent	13	27.2
	Rarely	14	29.1
	Never	12	25.0
	Total	**48**	**100.0**
Fire related disasters	Very frequent	7	14.5
	Frequent	12	25.0
	Rarely	14	29.1
	Never	15	31.4
	Total	**48**	**100.0**
Health/hygiene related disasters	Very frequent	10	20.9
	Frequent	14	29.1
	Rarely	24	50.0
	Never	0	0.0
	Total	**48**	**100.0**
School playground related disasters	Very frequent	5	10.5
	Frequent	18	37.5
	Rarely	16	33.3
	Never	9	18.7
	Total	**48**	**100.0**

The findings show that the most prevalent disasters in Homa Bay County are rain related disasters as cited by 54.1% of principals who said they are very frequent and 33.3% who said they are frequent followed by physical facility related disasters as cited by 25.0% who said they are very frequent and 33.3% who said they are frequent. This is an indication that Homa Bay County is faced with disasters that are association to heavy downpours such as floods and therefore flood disaster awareness and preparedness should be given more emphasis. These findings are in line with Ogutu (2008) while examining the school infrastructure in relation to school safety in Bondo District where multi stage random sampling was used to obtain a sample of 572 students from different schools in 6 different divisions and questionnaires were used to obtain data revealed that schools in the district were faced with numerous disasters most which were flood-related given that the areas is prone to floods. The current study aimed at establishing the type of disaster that has a high rate of occurrence in Homa Bay County.

4.5 Disaster awareness in secondary schools

Research question 2: to what extent are secondary schools in Homa Bay County plan for disaster awareness?

The study sought to establish the extent of planning for disaster awareness in secondary schools in Homa Bay County. Quantitative data were analysed using frequency counts. The findings have been discussed in the successive sub-sections.

4.5.1 Organisation of disaster awareness workshops/seminars

The researcher asked principals to state whether workshops/seminars on disaster awareness and preparedness have been planned and organized for secondary schools. Their responses indicate that majority of principals (62.4%) indicated that disaster awareness and preparedness workshops have been organized for school manager and teachers.

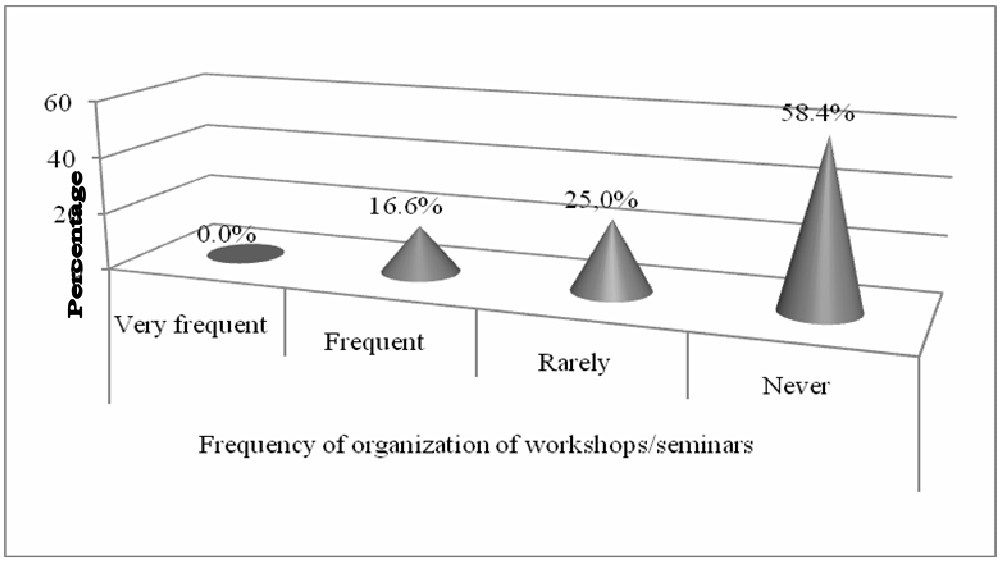
4.5.2 Attendance of workshops/seminars

The study sought from teachers whether they have ever attended disaster awareness and preparedness workshops/seminars. The findings revealed that majority of teachers (81.4%) have never attended disaster awareness and preparedness workshops/seminars. This is an indication that most teachers in secondary schools in Homa Bay County lack adequate awareness and preparedness to deal with disasters that may affect their schools.

4.5.3 Frequency of organization of workshops/seminars

Principals were asked to state how frequent workshops/seminars on disaster awareness and preparedness are organised. The results are as presented in Figure 4.4.

Figure 4.4: Frequency of organization of workshops/seminars

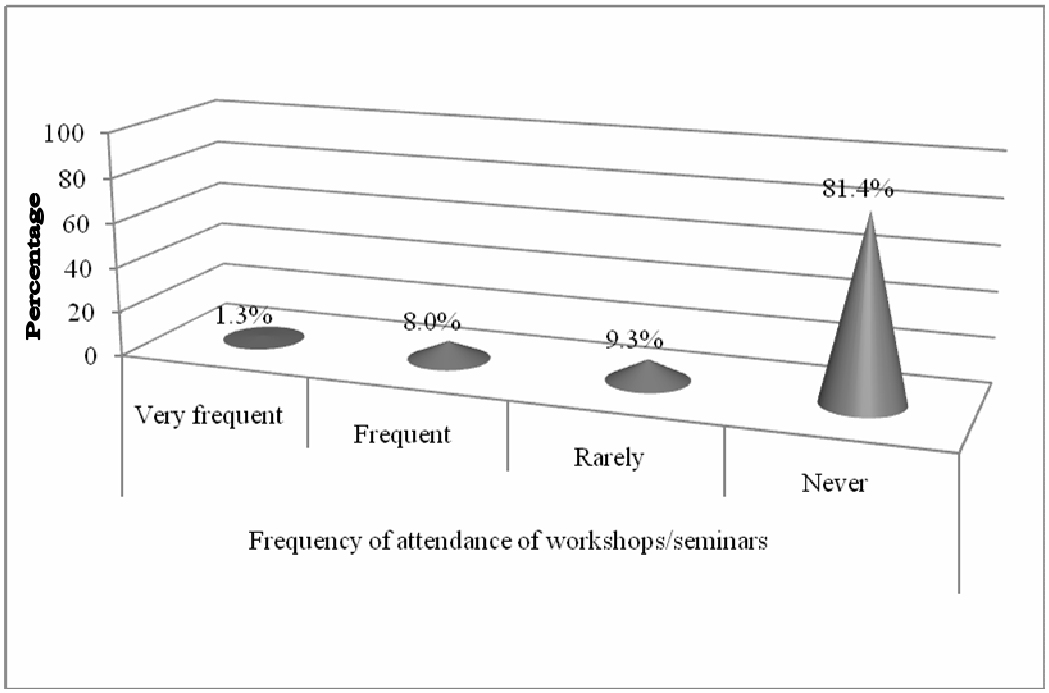


According to the findings presented in Figure 4.4, majority of principals (58.4%) indicated that workshops/seminars on disaster awareness and preparedness have never been organised in the district while 25.0% said they are rarely organised with 16.6% said they are frequently organised. This is an indication that disaster awareness and preparedness workshops/seminars have not been given priority or that the dissemination of information on these workshops/seminars to schools is not adequate.

4.5.4 Frequency of attendance of workshops/seminars

The researcher asked teachers to indicate how frequent they attend workshops/seminars on disaster awareness and preparedness. The findings are as shown in Figure 4.5.

Figure 4.5: Frequency of attendance of workshops/seminars



The results in Figure 4.5 reveal that a higher number of teachers 81.4% who had never attend workshops/seminars (9.3%) have only done so on rare occasions while 8.0% said that attend these workshops/seminars frequently. These findings show that most teachers in secondary schools in Homa Bay County have never attended workshops/seminars on disaster awareness and preparedness and that the few who have attended have only done so on rare occasions. This means that the level of disaster awareness and preparedness among these teachers is inadequate.

4.5.5 Provision of courses, in-service and refresher courses on safety assessment

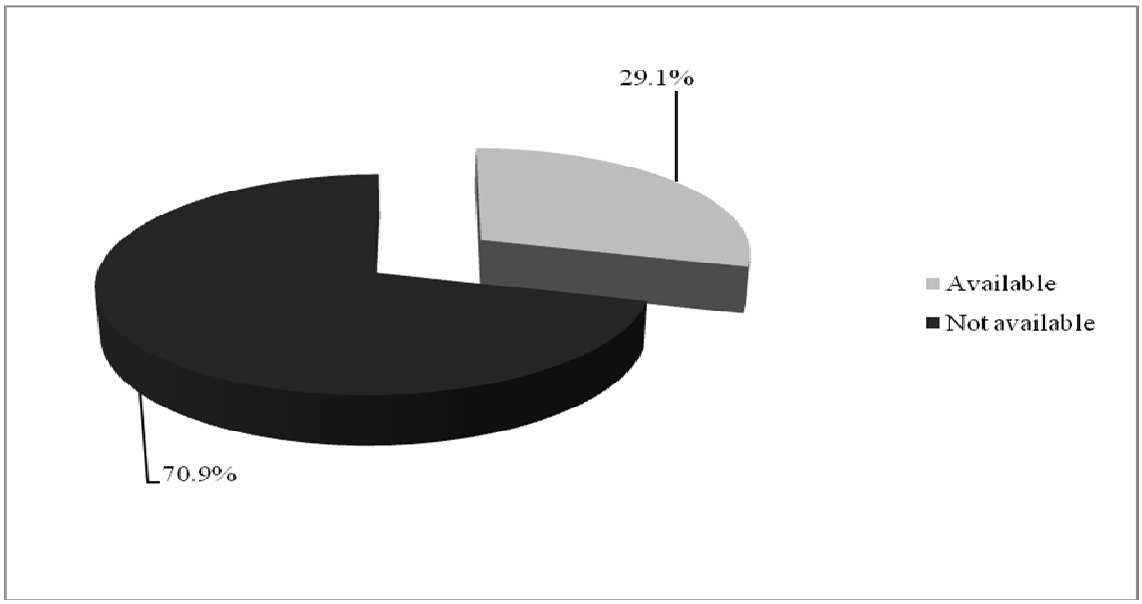
The researcher asked principals to indicate whether courses, in-service and refresher courses on safety assessment have ever been organised for principals and teachers. The findings revealed that majority of principals (66.7%) indicated that there is no provision of courses, in-service and refresher courses on safety assessment for principals and

teachers in Homa Bay County. This is a further indication that levels of disasters awareness and preparedness among principals and teachers might be inadequate due to lack of adequate sensitisation and brainstorming.

4.5.6 Availability of school safety manual

The study sought from principals whether they have acquired the school safety standards manual from the Ministry of Education for their schools. The results are as presented in Figure 4.6.

Figure 4.6: Availability of school safety manual



From principals' responses as presented in Figure 4.6, majority of them (70.9%) have not obtained school safety standards manual for their schools. This means that most of these principals may be lacking knowledge on the safety measures and procedures in their schools.

4.5.7 Disposal of waste materials (trash)

The study sought from principals' ways through which they dispose waste materials in their schools. The results are as presented in Table 4.4.

Table 4.4: Disposal of waste materials (trash)

N = 48

Response	Frequency	Percentage
Burning in the school composite pit.	44	91.6
Collected by waste collection companies	1	2.0
Burning in the incinerator	6	12.5

The findings reveal no principal accepted that Left waste material(trash)laying all over the school compound .Majority of principals (91.6%) indicated that they dispose waste materials by burning them in open composite pits while 12.5% said they burn it in the incinerator. Only 2.0% said it is collected by waste collection companies. These findings show that most secondary schools in Homa Bay County, dispose waste materials by burning them in the open thus exposing these schools to fire disasters which points to inadequate disaster awareness. According to Kay (2003) all kinds of trash should be discarded properly as they tend to quickly catch fire.

4.5.8 Storage of inflammable substances

Principals were asked to state where flammable substances are stored in their schools. The results are as presented in Table 4.5.

Table 4.5: Storage of inflammable substances
N = 48

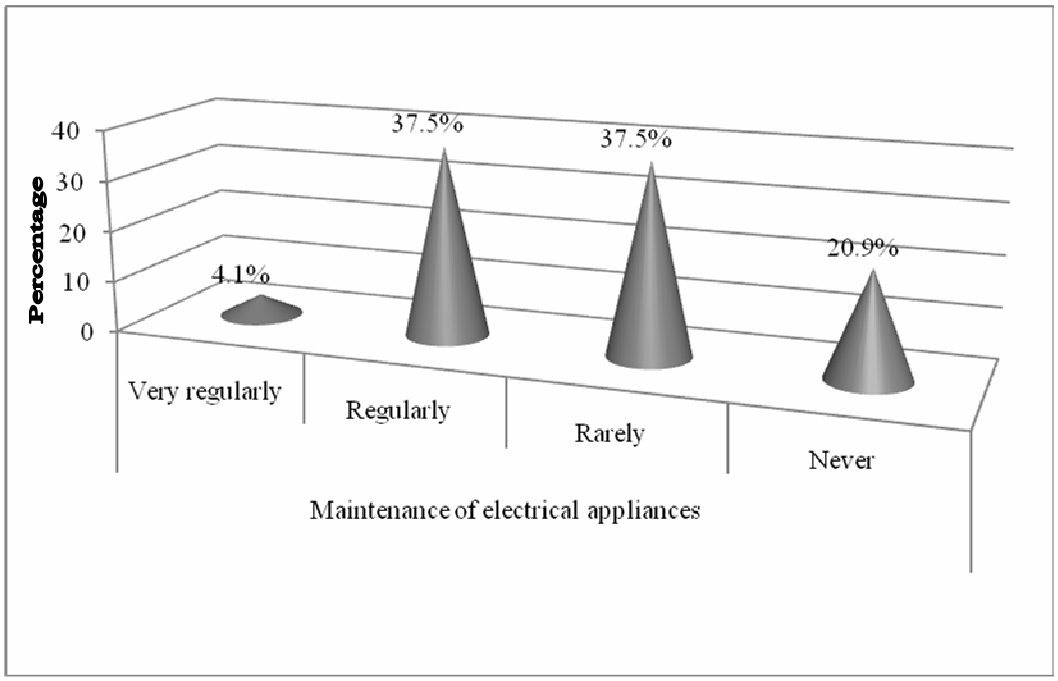
Response	Frequency	Percentage
Stored in the school stored	31	64.5
Stored in the laboratory	26	54.1
Stored in the school kitchen	8	16.6
Stored in class	1	2.0
Stored in offices	7	14.5

The findings show that majority of principals (64.5%) said that flammable substances are stored in the school stores followed by 54.1% who said they are stored in the laboratory while 16.6% said they are stored in the school kitchen. This is an indication they quite a number of schools are storing flammable substances in placed where they are likely to be expose to fire and thus portrays inadequate fire disaster awareness in these schools. According to Explosive Act Cap [115] inflammable substances such as petroleum, paint, chemicals etc should be stored in tightly closed cans or containers and away from any source of heat. They should never be stored in classrooms and dormitories. The use of hurricane lamps in the dormitories should be properly regulated.

4.5.9 Repair and maintenance of electrical appliances

The study sought from principals how often they repair electrical appliances. Their responses are as presented in Figure 4.7.

Figure 4.7: Maintenance of electrical appliances



The findings if Figure 4.7 show that 37.5% of principals said that repair and maintenance of electrical appliances is done on regular basis while the same number (37.5%) said it is done on rare occasions with 20.9% said it is never done. This is an indication that the levels of disaster awareness in most schools is inadequate given the lip service given to the repair and maintenance of electrical appliances. According to Ministry of Education (2001) an electrician should regularly check the electrical wiring and replace any that is weak, broken or worn out.

4.5.10 Students' access to flammable objects

The researcher asked students to indicate whether they are allowed to possess flammable objects while in school. Their responses are as indicated in Table 4.6.

Table 4.6: Students' access to flammable objects
N = 500

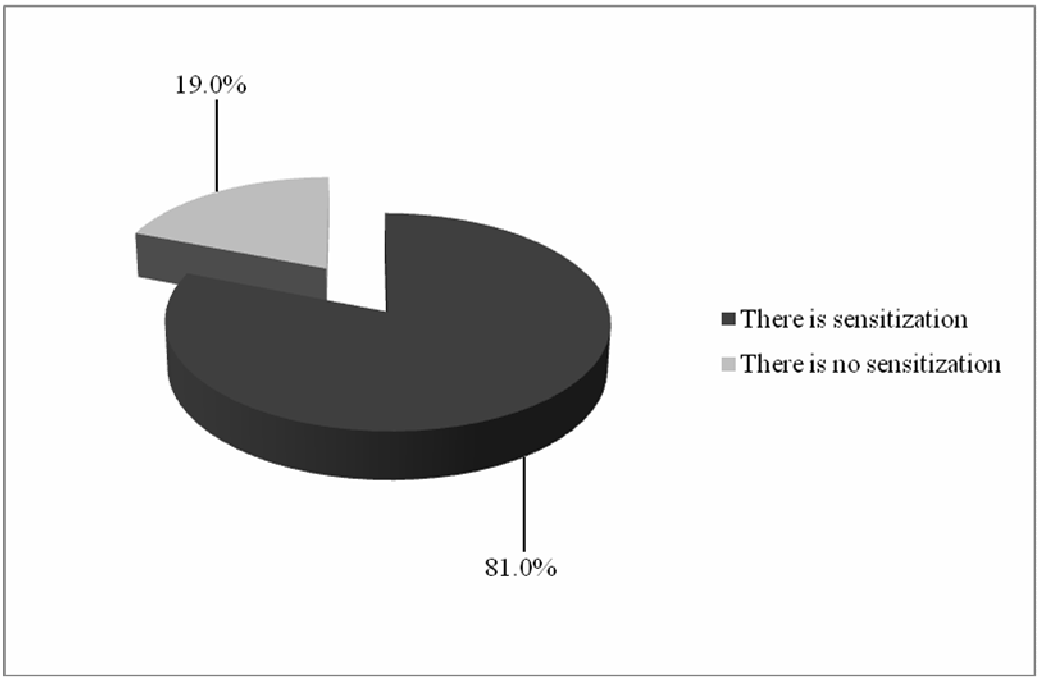
Response	Frequency	Percentage
Students are allowed to have flammable objects	156	33.2
Students are not allowed to have flammable objects	334	66.8
Total	**500**	**100.0**

The results in Table 4.12 show that majority of students (66.8%) said that they are not allowed to have flammable objects while in school. This is an indication that there is a substantial level of awareness of fire disasters among school administrations in Homa Bay County. According to Ministry of Education (2001) students should not carry or play with matches as they can result in clothing or other items catching fire.

4.5.11 Sensitization of learners on dangers of fire

The researcher asked students to indicate whether they have received sensitization on the dangers of fire. The results are as presented in Figure 4.8.

Figure 4.8: Sensitization of learners on dangers of fire



The findings in Figure 4.8 show that majority of students (81.0%) have been sensitized on the dangers of fire. This is an indication that most students in secondary schools in Homa Bay District are aware of the dangers of fire. Alberta Learning Special Education Board (1999) notes that, teachers should sensitise students about the dangers of fire through the related sections in the curriculum.

4.5.12 Ways through sensitization is done

The researcher further asked students to indicate methods that have been used to sensitize them on the dangers of fire. The results are as presented in Table 4.7.

Table 4.7: Ways through sensitization is done

N = 500

Method of sensitization	Frequency	Percentage
During normal teaching	398	79.6
Fire management and prevention talks	42	8.4
Conducting fire drills	62	12.4
School assemblies	213	42.6

The results in Table 4.7 show that majority of students 79.6% revealed that sensitization on the dangers of fire is normally done during normal teaching in class while 42.6 % said its done during school assemblies and 12.4% said through conducting fire drills. This shows that class lessons are being used to sensitise students on the dangers of fire is secondary schools in Homa Bay County. Fire drill are very important yet neglected by many schools (James, 2007) .Only 8.4% said they had fire management and preventive talks this indicate that only few schools have realized the benefit of fire preventive talks.

According to Alberta Learning Special Education Board (1999) schools should plan and invite the local fire department to give talks and demonstrations to learners about fire prevention in a school context. Students and staff should undertake periodic fire drills, at least twice a term. The students should leave the room immediately, without creating any panic rush. Students should also be advised to crawl on the floor when going through a smoky area or room as smoke and heated gases tend to rise and so they will be thinnest near the floor. Doors that feel hot should not be opened as the fire on the other side could

be blazing fiercely or one could get killed by the burst of heat and smoke when the door is opened. One should not run in clothes that are on fire. Running helps to fan and spread the flames. Instead, one should roll on the floor to smother the flames. Learners should not return to the classroom or dormitory or any other building. After they have escaped, the Fire Department or the relevant authorities should be called. Fire extinguishers should on the other hand be located in strategic places in the school. What to do in case of a fire. In a study by Nduku (2008) on school disaster awareness and preparedness in public secondary schools in Nyandarua District where the respondents of the study comprised of 54 teachers and 120 students. Data collected on the study were analysed using a stepwise multiple regression analysis. The results revealed that the levels of disaster awareness and preparedness were less than satisfactory. Teacher's levels of awareness were found to be key determinants of students' levels of awareness meaning that students get such knowledge from teachers.

4.6 Levels of disaster preparedness

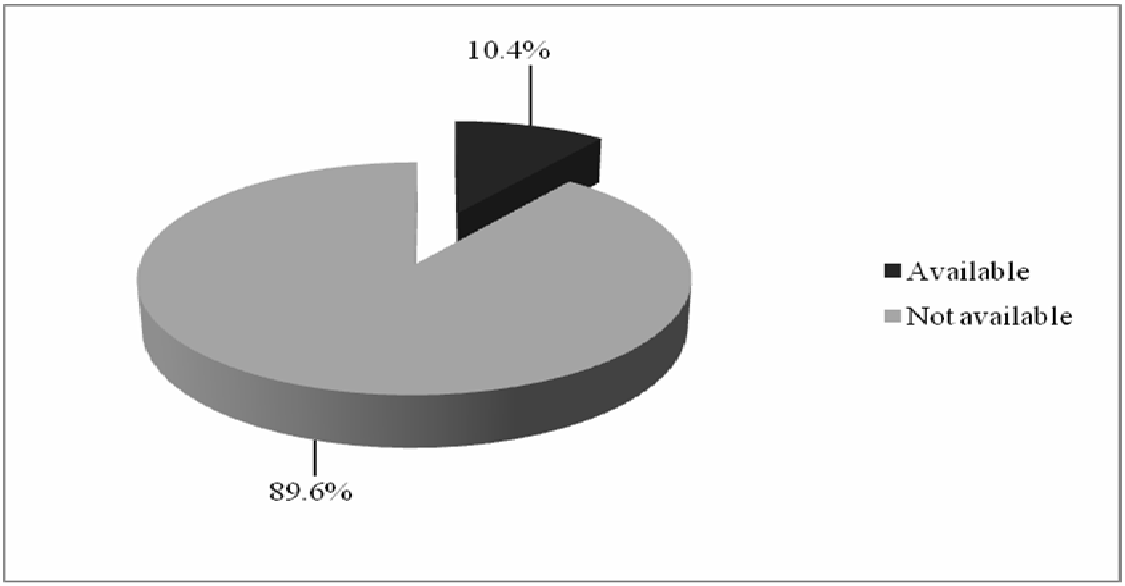
Research Question 3: What are the levels of disaster preparedness in secondary schools in Homa Bay County?

The study sought to establish levels of disaster preparedness in secondary schools in Homa Bay County. Qualitative data were analysed using descriptive statistics while quantitative data were analysed using frequency counts. The discussion of findings has been presented in the successive sub-sections.

4.6.1 Preparedness for Flood related disasters

The study sought from principals whether they have provided guidelines on how members of the school community can prepare for possible floods related disasters. The findings are as presented in Figure 4.9.

Figure 4.9: Availability of flood safety guidelines



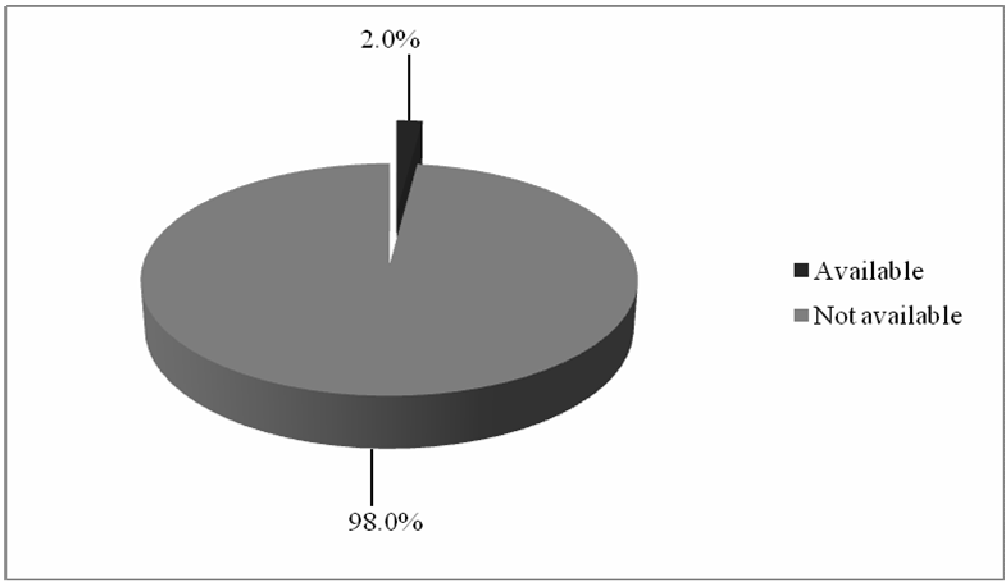
The findings reveal that majority of principals (89.6%) indicated that they do not have safety guidelines for floods related disasters in their schools. This is an indication that most secondary schools in Homa Bay County are not adequately prepared to deal with floods related disasters. According to Kay (2003) in case sections of the route to school are flooded, learners should not attempt to wade through floodwater on their own. After the onset of floods, school authorities also should ensure all the electrical lights, sockets and appliances are carefully checked by a qualified electrician before they are used. School authorities are also required to ensure that drinking water is boiled at all times.

The school should further have all the physical structures like classrooms, toilets, dormitories, and administrative block checked by competent authorities before they are declared safe for use by learners and staff.

4.6.2 Availability of safety guidelines during landslides

The researcher asked principals to state whether they have safety guidelines during landslides in their schools. Their responses are as presented in Figure 4.10.

Figure 4.10: Availability of safety guidelines during landslides



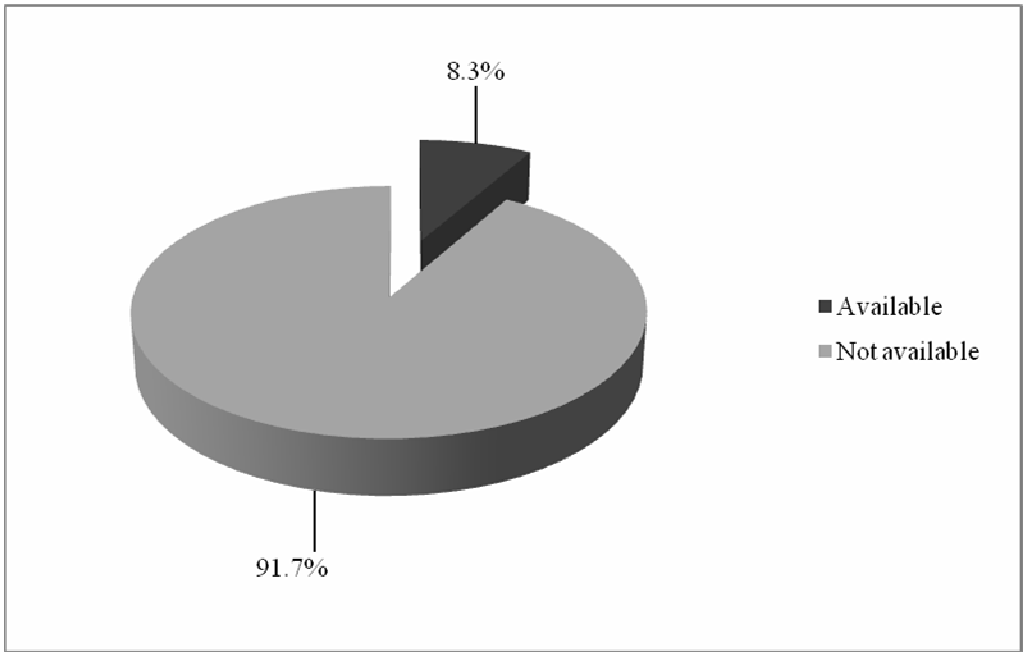
The findings in Figure 4.10 show that an overwhelming majority of principals (98.0%) indicated that they do not have safety guidelines in case of landslides in their schools. This is an indication that most secondary schools in Homa Bay County are not adequately prepared to deal with landslide related disasters. According Kay (2003) during heavy rains, schools in landslide-prone areas should be on the lookout for signs of unusual land

movement. On detection of unusual land movement, alternative learning facilities should be used until the threat ends. Rapid evacuation measures should be implemented when a landslide takes place.

4.6.3 Safety guidelines during thunderstorms and lightning

The study sought from principals whether they have safety guidelines for thunderstorms and lightening in their schools. The results are as presented in Figure 4.11.

Figure 4.11: Availability of Safety guidelines during thunderstorms and lightning



The results in Figure 4.11 show that majority of principals (91.7%) do not have safety guidelines to be used in case of thunderstorms and lightening disasters. This shows that most secondary schools in Homa Bay County have not planned or prepared to deal with

thunderstorm/lightening related disasters. According to Ministry of Education (2008) during thunderstorms, learners should remain in the school and stay in-doors. Learners should also be seated inside school buildings. No one should take shelter in the verandahs or open places. Learners should further be warned that during thunderstorms, they should never take shelter under trees or walk in the rain. In areas prone to thunderstorms and lightning, school authorities should install lightning arresters.

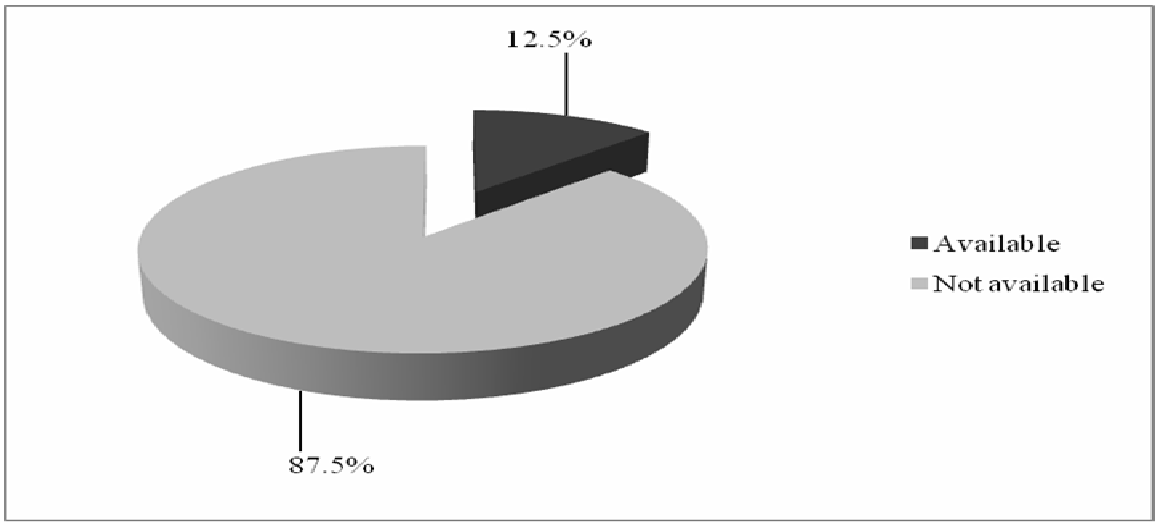
4.6.4 Safety during an Earthquake

The researcher asked principals to indicate whether they have safety guidelines for disasters due to earthquakes. The study findings show that none of the principals said they have provided safety guidelines to be followed in case of earthquakes. This is an indication that most secondary schools in Homa Bay County are not adequately prepared to deal with earthquake related disasters. According to Ministry of Education (2008) when learners are inside the classroom and an earthquake occurs, they should take cover under desks or tables. They should not panic or attempt to rush outside or near windows. Where evacuation is necessary learners should have clearly stated (standing) procedures on how to move out of the buildings. If learners are in the open and an earthquake occurs, they should move away from buildings because they can be struck by falling building materials and other rubble.

4.6.5 Safety during Strong Winds

Principals were asked to indicate whether they have provided safety guidelines for disasters as a result of strong winds. The results are as indicated in Figure 4.12.

Figure 4.12: Availability of safety during Strong Winds

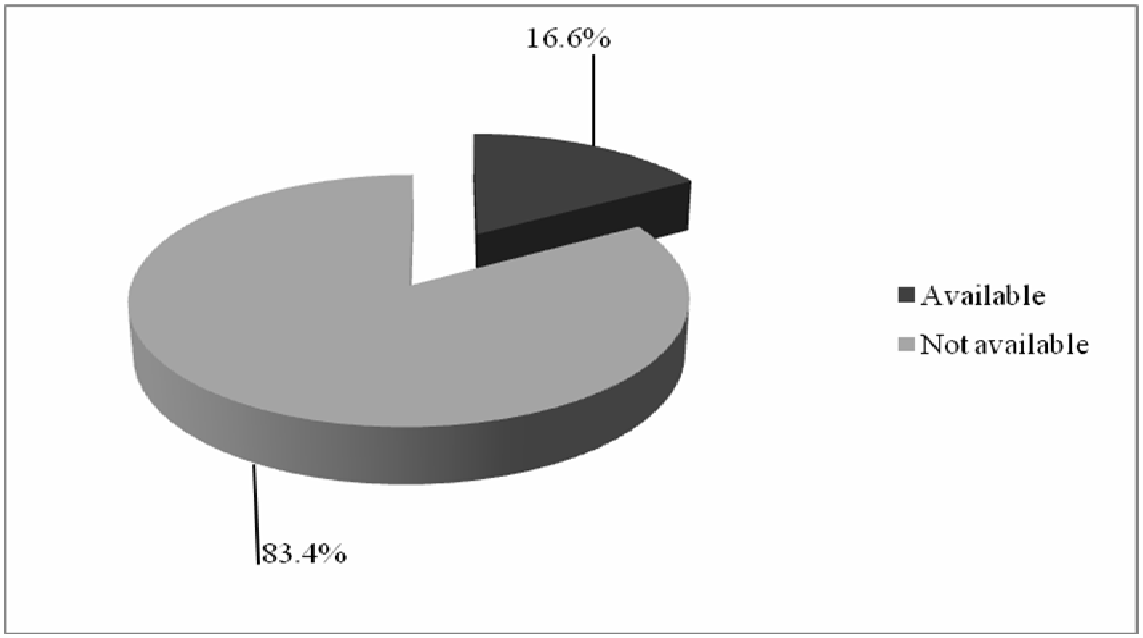


The findings reveal that majority of principals (87.5%) indicated that they do not have safety guidelines for safety during strong winds. This is an indication that most secondary schools in Homa Bay County are not adequately prepared to deal with disasters as a result of strong winds. According to Ministry of Education (2008) if learners are inside a classroom, the windows should be closed immediately. They should also stay away from the windows. Learners should be advised to seek shelter under a desk or table. In open grounds, learners should lie flat on the ground or in trenches.

4.6.6 Availability of guidelines for Fire disasters

Principals were asked to state whether they have provided guidelines for fire disasters. The results are as presented in Figure 4.13.

Figure 4.13: Availability of guidelines for Fire disasters



The results of Figure 4.13 show that majority of principals (83.4%) have not provided their schools with fire disaster guidelines. This is a sign that most secondary schools in Homa Bay County are not adequately prepared to deal with fire related disasters.

4.6.7 Guidelines on Safety during Poisonous Chemical Emissions/Severe Pollution

The researcher asked principals to indicate whether they have provided guidelines on safety during poisonous chemical emissions and severe pollution. The results are as shown in Table 4.8.

Table 4.8: Guidelines on Safety during Poisonous Chemical Emissions/Severe Pollution

N = 48

Response	Frequency	Percentage
There is sensitization	3	6.2
There is no sensitization	45	93.8
Total	**48**	**100.0**

The results in Table 4.8 show that majority of principals (93.8%) indicated that they have not provided guidelines on safety during poisonous chemical emissions and severe pollution. The is an indication that secondary schools in Homa Bay County are not adequately prepared to deal with disasters arising from poisonous chemical emissions and severe pollution. According to Redican, Olsen, Baffi, (1993) teachers should sensitize learners about the dangers of poisonous chemical emission/severe pollution through the related sections in the curriculum. If poisonous gas or chemical leakages/emissions that are likely to pose a threat to learners and staff occur, school authorities should be notified immediately. Once notified, school authorities should immediately contact relevant experts on gas or chemical risks. School authorities should then quickly implement evacuation plans for all persons in the school. For affected individuals, school authorities should seek immediate emergency treatment at the nearest medical facility.

4.6.8 Students' knowledge of road safety rules

Nearly all the secondary schools in Homa Bay County are day schools. Learners have to commute to school using 'matatus', buses, and bicycles. Many also walk to schools.

There are many instances where learners have been involved in accidents as pedestrians or passengers, some culminating into fatalities due to negligence, ignorance or sheer irresponsibility in observing basic road usage rules. The researcher sought from students whether they are knowledgeable of various road safety rules. The results are as shown in Table 4.9.

Table 4.9: Students' knowledge of road safety rules
N = 500

Response	Frequency	Percentage
Have been taught road safety rules	123	24.6
Have not been taught road safety rules	377	75.4
Total	**500**	**100.0**

The results in Table 4.22 revealed that majority of students (75.4%) said that they have not been taught road safety rules. These findings show that most students in secondary schools in Homa Bay County are not conversant with road safety rules which might expose them to transport related disasters. According to Ministry of Education (2008) schools should ensure that learners are conversant with the basic road safety rules as pedestrians, or passengers in public service vehicles in order to minimise traffic accidents.

4.6.9 Students' poor use of roads

The researcher asked students to indicate how they normally use roads when going to and from school. The results are as highlighted in Table 4.10.

Table 4.10: Students' poor use of roads

N = 500

Response	Frequency	Percentage
Students who walk on the sidewalks or roadside.	445	89.0
Students who board or alight from a moving public service vehicle	278	55.6
Students who play on the roads or close to the roads.	237	47.4
Students who always walk in the direction of oncoming traffic	210	42.0
Students who cross the roads only at designated places, such as zebra crossing, footbridges or tunnels	145	29.0
Students who hang on the doors of moving vehicles	106	21.2
Students who sometimes stick out their heads or hands when inside a motor vehicle	88	17.6
Students using bicycles which are in good condition and well maintained	87	17.4
Students who attempt stunts while riding a bicycle	70	14.0
Bicycle with reflectors and lights	66	13.2
Students who ride bicycles in the same direction as the flow of the motor traffic	50	10.0
Students who sit and fasten seat belts when using 'matatus' or other public service vehicles.	33	6.6

According to the findings in Table 4.10, majority of students (89.0%) walk on the sidewalks or roadside followed by (55.6%) who board or alight from a moving public service vehicle. The findings however show that a number of students (47.4%) play on the roads or close to the roads. These findings show that as much as there are students who observe some road safety rules, there are some who are flouting these rules which might expose them to transport related disasters. According to Ministry of Education

(2008) students should walk on the sidewalks or a distance away from the street or road. Students should also always walk in the direction of oncoming traffic; should be trained to obey traffic lights and look in both directions before crossing a road or chasing a ball or any item on the road; should cross the roads only at designated places, such as zebra crossing, footbridges or tunnels; schools should seek the assistance of the local authorities in erecting bumps on roads near the school to slow down traffic flow and that students should never play on the roads or close to the roads.

Lucia (2003) avows that, it is the responsibility of every student using a bicycle to ensure it is in good condition and is well maintained. Parents/guardians need to ensure that their children's bicycles are in good condition. A bicycle should have reflectors and lights and students should never attempt any stunts while riding a bicycle. Students should further obey traffic signs and signals; bicycles should be ridden in the same direction as the flow of the motor traffic; students riding bicycles should never hold on to moving motor vehicles for assistance; school Management Committees/Board of Governors should liaise with respective local authorities to vet *boda boda* riders and motor cyclists who provide transport for children; students should follow regular routes to and from school, especially when the mode of transport is a *boda boda*/motorcycle and parents should monitor and regularly ensure that this requirement is observed and know the people who provide their children's transport.

When using public transport, students should ensure that they are seated and should fasten seat belts when using ‘matatus’ or other public service vehicles. They should also not stick out their heads or hands when inside a motor vehicle and should not board or alight from a moving public service vehicle. Students are also advised to refuse food/drinks, money, gifts or similar inducements from motorists and other strangers. The students should be sensitised and instructed on safety measures to take in the event of an accident. Rasiah (2011) in a study on disaster preparedness in public secondary schools in Isiolo District showed that most public secondary schools in Isiolo District are yet to put in place measures to ensure disaster preparedness.

4.7 Administrative strategies on disaster awareness and preparedness

Research Question 4: What administrative strategies have school managers put in place to enhance disaster awareness and preparedness?

This section presents analysis of data on the administrative strategies being put in place by secondary schools in Homa Bay County towards disaster awareness and preparedness. Quantitative data were analysed using frequency counts.

4.7.1 Existence of disaster Response Team

The researcher asked principals to state whether they have put in place disaster response teams. The results are as presented in Table 4.11.

Table 4.11: Existence of disaster Response Team

N = 48

Response	Frequency	Percentage
Available	12	25.0
Not available	36	75.0
Total	**48**	**100.0**

The findings presented in Table 4.11 show that majority of principals (75.0%) have not put in place a disaster response team in their schools. This is an indication that most school administration have not put in place adequate mechanisms to deal with disasters.

4.7.2 Existence of school Safety Sub-Committee

The study sought from principals whether they have put in place a school safety sub-committee as it is required by the Ministry of Education. The findings show that none of the principals have put in place a school safety sub-committee. According to Ministry of Education (2008) the specific functions of this committee are identify the safety needs of the school with a view to taking the necessary action; mobilise 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 and constantly review issues of child safety in and around the school. Therefore the absences

of this sub-committee means those secondary school administrations in Homa Bay County have failed in responsibilities to promote disaster awareness and preparedness.

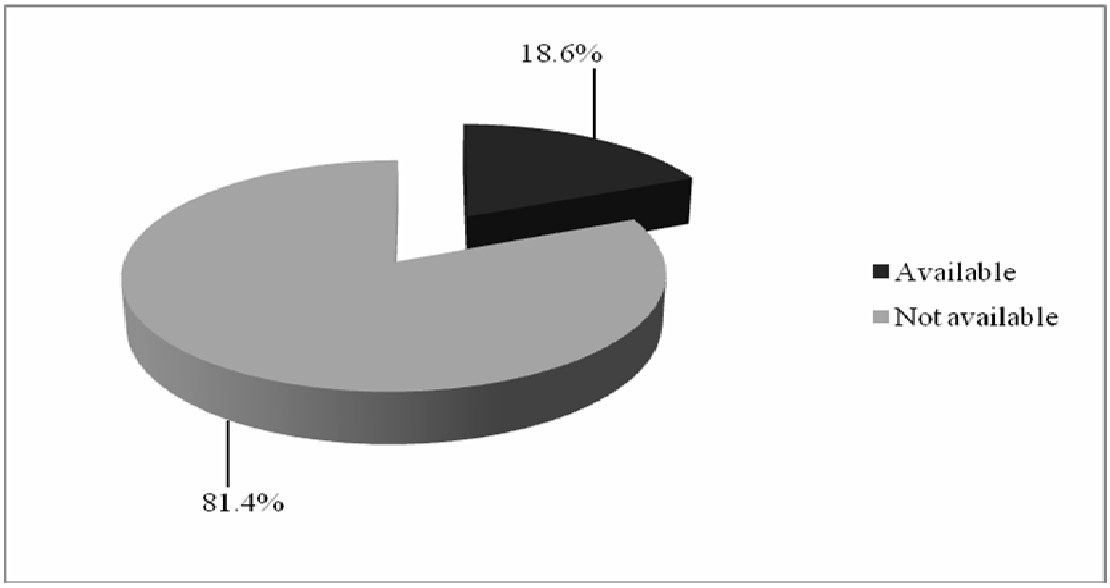
4.7.3 Availability of Early Warning Mechanisms

Principals were asked to indicate whether they have put in place disaster early warning mechanisms in their schools. The findings show that none of the principals (100.0%) said that they have early disaster warning mechanisms in their schools. This is an indication that school administrations are not doing enough to ensure that students and other members of the school community receive times warning of disasters. Odalo (2001) posit that school should have early warning mechanisms. According to Ministry of Education (2008) it is important to note that not all disasters are rapid or sudden. Some disasters develop over time and there is usually a lead time to receive information and react to early warnings. Careful monitoring and early warning are useful only if they help to avert potentially dangerous events or circumstances that can lead to emergency or disaster or if they lead to actions taken to minimise damage. The purpose of monitoring and early warning is to enable remedial measures to be initiated and to provide more timely and effective relief through disaster and emergency preparedness actions. Early-warning mechanisms will provide the school community and other stakeholders with relevant information to enable them make informed decisions for evacuation or relocation.

4.7.4 Availability of emergency response procedures

The study sought from the school principals whether they have provided emergency safety procedures that are accessible to all in the schools. Their responses are as presented in Figure 4.14.

Figure 4.14: Availability of emergency response procedures



The results reveal that majority of principals (81.4%) admitted that they have not put in place emergency response procedures in their schools. This further point the failure by school administrators in ensuring disaster awareness and preparedness. This is contrary the recommendations of Safety Standards Manual for Schools in Kenya that the School management/board should create mechanisms and procedures that ensure stakeholders are conversant with measures needed to prevent occurrence of disasters and steps required to reduce the impact (Ministry of Education, 2008).

4.7.5 Disaster response guidelines available in schools

The researcher asked principals to list disaster response guidelines available in their schools. The findings are as shown in Table 4.12.

Table 4.12: Disaster response guidelines available in schools

N = 48

Disaster response guidelines	Frequency	Percentage
A telephone tree list including all employees (include e-mail address, pagers, mobile phones numbers).	40	83.3
Fire safety guidelines	40	83.3
Guidelines on safety during floods	17	35.4
Thunderstorms and lightning	14	29.1
Schedule for disaster drills	14	29.1
Guidelines on safety during Poisonous Chemical Emissions/Severe Pollution	10	20.8
Landslides safety guidelines	3	6.3

The findings in Table 4.12 show that majority of principals (83.3%) indicated that they have provided fire safety guidelines and telephone tree lists including all employees (include e-mail address, pagers, mobile phones numbers). This was followed at a distance by 35.4% who said they have provided guidelines on safety during floods. This is an indication that fire has been given more attention while other disasters such as poisonous chemical emissions/severe pollution which are more likely to occur due to laboratory

activities have not be adequately recognised. The worst neglected guideline was that on safety during an earth quake where none of schools had.

4.7.6 Regular spot checks in dormitories

The researcher asked principals of schools with boarding section to indicate how frequent spot checks are conducted in dormitories in their schools. The results are as presented in Table 4.13.

Table 4.13: Regular spot checks in dormitories

N = 48

Responses	Frequency	Percentage
Very often	20	41.6
Often	26	54.1
Rarely	6	12.5
Never	14	29.1

The results in Table 4.13 show a number of principals 29.1% who said they never do regular spot checks in the dormitories this indicate that some secondary schools do not have boarding facilities. However a higher number of principals (54.1%) indicated that spot checks in dormitories are done often followed by 41.6 % said it is done very often. This is an indication that most school secondary schools in Homa Bay County are conducting regular spot checks in dormitories when students are in class, in the field and during other outdoor activities. According to Ministry of Education (2008) regular spot

checks by the teachers and the administration should be undertaken before learners retire to bed.

4.7.7 Taking of roll calls

Principals were asked indicate how often they take roll calls when students retire to dormitories. The findings are as presented in Table 4.14.

Table 4.14: Taking of roll calls

N = 48

Responses	Frequency	Percentage
Very often	25	52.0
Often	15	31.2
Rarely	9	18.7
Never	14	29.1

The table 4.14 indicate a number of principals(29.1%), who said they take roll calls before students retire to bed this indicate that some secondary schools do not have boarding facilities. Higher number of principals (52.0%) said that roll calls are taken in dormitories very often followed by 31.2% who said they are taken often. This shows that most school administrations in secondary schools in Homa Bay County take roll calls before students retire to bed regularly. According to Ministry of Education (2001) an accurate roll call should be taken every day and records well maintained.

4.7.8 Patrols by the school security personnel

The researcher asked principals whether school security personnel in their schools conduct regular patrols in the schools. The results are as shown on Table 4.15.

Table 4.15: Patrols by the school security personnel

N = 48

Responses	Frequency	Percentage
Very often	30	62.5
Often	15	31.2
Rarely	7	14.5

The findings of the study show that a higher number of principals (62.5%) indicated that security personnel very often followed by 31.2% who said patrols are conducted often. Only 14.5% admitted that patrol by school security personnel was done rarely. This shows that most secondary schools in Homa Bay County have effective security systems which are essential in minimizing occurrence of disasters. According to Ministry of Education (2008) there should be regular patrols by the school security personnel or any other authorized security personnel. No stranger should be allowed in the dormitory.

4.7.9 Inspection of hygiene standards of dormitories

Principals were asked how often inspection of hygiene standards of dormitories is conducted in their schools. The results are as presented in Table 4.16.

Table 4.16: Inspection of hygiene standards of dormitories
N = 48

Responses	Frequency	Percentage
Very often	24	50.0
Often	17	35.4
Rarely	7	14.5
Never	14	29.1

The findings shown in Table 4.16 show that a higher number of principals (50.0%) indicated that inspection of hygiene standards of the dormitories is done very often followed by 35.4% who said it is done often. The table further shows 29% of the principals who said they never did inspection of hygiene standards of dormitories indicate that some schools did not have the dormitory facility. This shows that secondary schools in Homa Bay County carryout inspection of hygiene standards of dormitories. According to Kay (2003) there should be inspection of hygiene standards of the dormitories and the learners on alternate days of the week.

According to Wasike (2010) in a study to understand the work line of a principal in relation to disaster awareness and preparedness in Bungoma District where the study examined the relationship between the time principals' leadership strategies and time spent on different activities that promote disaster awareness .The study established that time spent on school organizations management activities associated with disaster awareness was inadequate.

4.8 Modification of school physical facilities for disasters preparedness

Research question 5: In what ways have school facilities modified to cope with school disasters?

Physical facilities include structures such as classrooms, offices, toilets, dormitories, libraries, laboratories, kitchen, water tanks, playground equipment, among others. These facilities can be either permanent or temporary structures. Such physical structures should be appropriate, adequate and properly located, devoid of any risks to users or to those around them. They should also comply with the provisions of the Education Act [Cap 211], Public Health Act [Cap 242] and Ministry of Public Works building regulations/standard. The study sought to establish the extent to which these school physical facilities have met disaster preparedness requirements. To achieve this, the researcher conducted observation and took measurements of various physical facilities in the purposively selected schools to ascertain their conformity with the schools safety manual guidelines. Data were analysed using both descriptive statistics and frequency counts. The results are discussed in the following sub-sections.

4.8.1 Safety of classrooms

Classrooms are important infrastructures in a school setting since learners spend most of their time in these facilities. The study investigated the extent to which classrooms have been modified to make them disaster free. The results are as discussed in the following sub-sections.

4.8.1.1 Adequacy of class size

The researcher measured the classrooms sizes if they are in line with the Ministry of education specifications and to verify whether they are spacious enough to provide a safe learning environment for students. The results are presented in Table 4.17.

Table 4.17: Adequacy of class size
N = 48

Response	Frequency	Percentage
Spacious enough	27	56.2
Not spacious enough	21	43.8
Total	**48**	**100.0**

The findings revealed that a higher number of schools visited (56.2%) have classrooms that are spacious enough however, a substantial number of schools (43.8%) have classrooms that are not spacious enough. This is an indication that a number of secondary schools in Homa Bay County are overcrowded and therefore likely to expose students to dangers. According to Ministry of Education (2008) the size of the classroom, in terms of length and width, should be as specified in the Ministry of Education building specifications i.e. 7.5m x 5.85m or 7.5m x 6.0m. Such classrooms should accommodate a maximum of 30 learners in one-seater desks or 40 learners in two-seater desks in line with the provisions of the Ministry of Education circular on Health and Safety Standards in Educational Institutions (2001).

4.8.1.2 State of classroom doors

The researcher measured classroom doors to establish if they are wide enough and observed whether they open inwards of outwards. The results are presented in Table 4.18.

Table 4.18: State of classroom doors

N = 48

Response	Frequency	Percentage
Wide enough	22	45.8
Not wide enough	26	54.8
Total	**48**	**100.0**
Open inwards	19	39.5
Open outwards	29	60.5
Total	**48**	**100.0**

The findings show that a higher number of schools (54.8%) have classroom doors that are wide enough while a substantial number of schools (45.8%) have narrow doors. A higher number of schools (60.5%) have doors that open outwards while 39.5% have doors that open inwards. This is an indication that a number of schools have narrow doors which make hard for students to evacuate in case of an emergency. A number of secondary schools in Homa Bay County also have doors that open inwards thus making difficult to force them open from inside in case of emergency.

4.8.2 Schools with storied buildings

The researcher carried out observation to establish whether there were schools with storied buildings. The findings are as shown in Table 4.19.

Table 4.19: Schools with storied buildings

N = 48

Response	Frequency	Percentage
Have storied buildings	14	29.1
Do not have storied buildings	34	70.9
Total	**48**	**100.0**

The results show that majority of schools (70.9%) do not have storied buildings while 29.1% have storied buildings. This means that they are required to put in place safety measures against a number of disasters.

4.8.3 State of stairways on storied buildings

The researcher carried out an assessment of the storied buildings in 14 schools since they were the only ones with storied buildings to determine the state of the stairways. The observation findings are as highlighted in Table 4.20.

Table 4.20: State of stairways on storied buildings

N = 14

Response	Frequency	Percentage
Wide enough	8	57.2
Not wide enough	6	42.8
Total	**14**	**100.0**
Located on both sides of the building	7	50.0
Located on one side of the building	7	50.0
Total	**14**	**100.0**
Have items kept on them	4	28.5
Have no items kept on them	10	71.5
Total	**14**	**100.0**
Have been modified to serve learners with special needs	0	0.0
Have not been modified to serve learners with special needs	14	100.0
Total	**14**	**100.0**
The stairways have handrails	6	42.8
The stairways have no handrails	8	57.2
Total	**14**	**100.0**
Have strong hand rails	3	50.0
Have weak handrails	3	50.0
Total	**6**	**100.0**

The results reveal that a higher number of buildings (57.2%) have stairways that are wide enough while 42.8% have narrow stairways which may make evacuation difficult during emergency. The findings also show that half of the buildings have stairways on both ends of the buildings while the other half has stairways on only one side of building. This means that incase of fire starting from the side of the stairways, students will lack an alternative evacuation exit. The researcher also observed that 28.5% of the stairways had items kept in them which may become obstacles during evacuation. It was also observed that none of the stairways had been modified to serve students with special needs which will make it hard to evacuate them during emergency. It was further observed that 57.2% of stairways did not have handrails which may have made persons to easily fall since they had nowhere to hold when climbing and descending the stairs. Lastly is was observed that half of the stairways that had handrails the hand rails were not firmly fixed posing more danger to students.

According to Ministry of Education (2008) stairways should be wide enough and located at both ends of the building and should be clear of any obstructions at all times. The construction of stairways should give provision for learners with special needs/disabilities. The handrails in the stairs should be strong and firmly fixed.

4.8.4 State of classroom corridors

The research conducted an assessment of classroom corridors to establish whether they meet safety requirements. The findings are presented in Table 4.21.

Table 4.21: State of classroom corridors

N = 48

Response	Frequency	Percentage
Wide enough	32	66.6
Not wide enough	16	33.4
Total	**48**	**100.0**
Have items kept on them	28	58.3
Have no items kept on them	20	41.7
Total	**48**	**100.0**
Are well ventilated and lit	28	58.3
Are not well ventilated and lit.	20	41.7
Total	**48**	**100.0**

The findings show that 33.4% of the classroom corridors were not wide enough and therefore present a challenge during evacuation. It was also established that most classroom corridors (58.3%) had items such as dust bins, timber and broken furniture kept in them which not only pose danger to teachers and students but also be obstacles during evacuation. It was also observed that 41.7% of the classroom corridors were not well lit. According to Ministry of Education (2008) corridors should be both well ventilated and lit. The width should be wide enough for the learners to walk along without bumping into each other.

4.8.5 State of classroom window

The researcher also carried out an assessment of classroom windows. The findings are as presented in Table 4.22.

Table 4.22: State of classroom window

N = 48

Response	Frequency	Percentage
They have grills	40	83.3
They do not have grills	8	16.7
Total	**48**	**100.0**
They are easy to open	26	54.1
They are not easy to open	22	45.9
Total	**48**	**100.0**

The findings revealed that majority of schools (83.3%) had windows with grills which means that they cannot be used for evacuation. It was also observed that 45.9% of the windows were not easy to open meaning they cannot be used for evacuation. This is an indication that most secondary schools in Homa Bay County have classrooms with windows which do not meet safety standards. According to Ministry of Education (2001) classroom windows must be without grills and should be easy to open.

4.8.6 General state of classrooms

The researcher also conducted a general assessment to establish the general state of classrooms in relation to disaster preparedness. The results are as presented in Table 4.23.

Table 4.23: General state of classrooms

N = 48

Response	Frequency	Percentage
Floors are level	40	83.3
Floors are kept clean.	39	81.2
Walls are well maintained	36	75.0
Desks are arranged in a manner that facilitates easy and orderly movement of learners in the classroom	36	75.0
Properly lit and ventilated	34	70.8
Floors have cracks	29	60.4
The furniture especially the desks appropriate for use	28	58.3
Electrical sockets positioned beyond the reach of learners	11	22.9
Fitted with serviced fire extinguishers	6	12.5

The findings indicate that majority of classrooms in the schools visited do not have fire extinguishers, others have electrical sockets located within the reach of learners. This is an indication that most schools in Homa Bay County have paid lip service to disaster prepared of classrooms. According to Ministry of Education (2008) classrooms should be

properly lit and ventilated. The floors should be level and kept clean always. For cemented floors, any cracks should be repaired in good time. Similarly, for mud walls and floors teachers should ensure that they are regularly smeared with fresh mud and floors smeared with cow dung to prevent the development of cracks and the generation of dust that can pose risks to the health of both teachers and learners. In all cases, efforts should be made to cement all the classroom floors. Each block should also be fitted with serviced fire extinguishers.

The furniture in classrooms, especially the desks, should be appropriate for use by both male and female learners. Poorly constructed or inappropriate desks can lead to physical deformities such as curvature of spine, contraction of chest, roundness of shoulders or a confirmed stoop. They can also create tension and fatigue among learners. The class teacher should ensure that the desks are arranged in a manner that facilitates easy and orderly movement of learners in the classroom—ideally each desk should have no more than 3 learners and the space between any two desks should be at least 2 feet. The positioning of electrical sockets should be beyond the reach of young learners in order to avoid tampering and buildings housing classrooms should be accessible by special needs learners.

4.8.7 State of dormitories

The research carried out an assessment of dormitories to establish the extent to which they meet safety requirements. The results are as shown in Table 4.24.

Table 4.24: State of dormitories

N = 34

Response	Frequency	Percentage
Dormitories locked when students are in class or playgrounds	31	91.1
Dormitory windows with grills.	30	88.2
Adequate beds	29	85.2
Doorways wide enough	28	82.3
Dormitories kept clean	25	73.5
Doors open outwards	24	70.5
Dormitories with doors on both ends.	23	67.6
Dormitories well ventilated	22	64.7
Dormitory windows easy to open outwards.	22	64.7
Dormitories with emergence doors in the middle.	19	55.8
Corridors well spaced	18	52.9
Bunk beds strong and firm.	14	41.1
Adequate space between beds	12	35.2
Functioning fire extinguishers placed at both exits	9	26.4
Emergency doors clearly labelled “Emergency exit”	6	17.6
Alarms fitted and easily accessible.	2	5.8

Out of purposively selected secondary schools, only 34 of them had dormitory facilities and therefore the frequencies and percentages were based on a sample of 34 schools. The findings revealed that although most dormitories had met some safety requirements, it was discovered that majority of dormitories (88.2%) have windows with grills. Most of them did not have functioning fire extinguishers, lacked clearly labelled emergency doors and had not fitted emergency alarms. According to Ministry of Education (2008) in boarding schools, dormitories are the single most used physical infrastructure, where learners spend the longest continuous period of time in a day. It is therefore important to keep these structures clean and properly ventilated. The space between the beds should be at least 1.2 meters 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. It should be clearly labelled “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 (Kumba, 2008)

4.8.8 State of Sanitation Infrastructure

Sanitation infrastructure includes all the structures constructed for the purposes of disposal of human waste and for cleanliness. A safe school must have sanitation facilities built up to the required standards and kept clean with high standards of hygiene. The researcher carried out an assessment of these facilities to determine their safety compliance. The findings have been discussed in the following sub-sections.

4.8.8.1 Distance of toilets from tuition and boarding facilities

The researcher carried out an assessment of toilets to determine their distance from the tuition and boarding facilities. The results are as presented in Table 4.25.

Table 4.25: Distance of toilets from tuition and boarding facilities

N = 48

Responses	Frequency	Percentage
2 - 4 meters	3	6.2
5 - 7 meters	14	29.1
8 - 10 meters	20	41.6
More than 10 meters	11	23.1
Total	**48**	**100.0**

The findings revealed that a higher number of schools (41.6%) had toilets located between 8 to 10 meters from tuition and boarding facilities, 29.1% were between 5 – 7 meters while 23.1% were more than 10 meters. This is an indication that most secondary schools in Homa Bay County have not observed safety requirements in regard to location of toilets from tuition and boarding facilities. According to Redican, Olsen, & Baffi,

(1993) in cases where pit toilets are used these structures should be built at least 10 metres away from tuition and boarding facilities and on the downwind side.

4.8.8.2 State of sanitary facilities

The researcher carried out an assessment of sanitary facilities to establish whether they meet safety standards. The findings are shown in Table 4.26.

Table 4.26: State of sanitary facilities
N = 48

Response	Frequency	Percentage
High standards of cleanliness	12	25.0
Pit latrines deep enough	17	35.4
Good distance of pit latrines from water sources	11	22.9
Mixed schools, girls' sanitation areas distant from boys'	15	31.2
Safe and effective disposal of sanitary wear.	10	20.8
Latrines well ventilated	9	18.7
Sanitary facilities modelled to serve students with special needs	4	8.3
Sanitary facilities and equipment should be in the best state of repair	13	27.0
Proper protective measures for cleaners of sanitary facilities (e.g. provision of gloves)	1	2.0
Soap and tap water or water cans fitted with taps set outside the toilets for washing hands after use of these facilities.	5	10.4

The findings in Table 4.26 show that in majority of schools the state of sanitary facilities does not meet the required safety standards thus exposing members of the school community to disasters. It was established that only 25.0% of schools have sanitary facilities with high standards of cleanliness, 35.4% had pit latrines deep enough while 31.2% had girls' sanitation facilities distant from those for boys. This is contrary to the safety required safety standards as according to Redican, Olsen, & Baffi, (1993) where ablution block is attached to the dormitory, a high degree of cleanliness must be maintained. Pit latrines should also not be less than 6 meters (20ft) deep, and should be regularly well disinfected and should be at least 15 meters (50 ft) away from a borehole or well or water supply point.

Where there are boreholes or shallow wells in places with difficult soil types or land forms, the school management should seek the advice of the water department before the digging of a pit latrine. It is required that in mixed schools, girls' sanitation areas must be separate and offer complete privacy; each school should ensure safe and effective disposal of sanitary wear.

In all schools, appropriate provisions should be given to students with special needs and very young learners in pre-unit and lower primary. For example, passageways should be accessible and toilet facilities should be suitable for use by special needs learners and very young school children. All sanitary facilities and equipment should further be in the best state of repair, serviceable and inspected regularly. If learners are responsible for cleaning their sanitation facilities, proper protective measures (e.g. provision of gloves)

must be taken. Soap and tap water or water cans fitted with taps should be set outside the toilets for washing hands after use of these facilities.

4.8.9 State of school Libraries

The library is the centre of academic life of the school. It is the designated place for storing, lending and reading of books in a school. The researcher assessed the state of school libraries to establish whether they meet safety standards. The findings are presented in Table 4.27.

Table 4.27: State of school Libraries

N = 48

Response	Frequency	Percentage
Have sufficient space	23	47.9
Well ventilated	32	66.6
Fitted with functioning fire extinguishers	12	25.0
Have well-labelled emergency exits	6	12.5
Adequate lighting	27	56.2
Wide alleys of passageways to facilitate evacuation	22	45.8
Dusting books regularly, preferably every three days	18	37.5
Properly reinforced and well spaced bookshelves	27	56.2

The findings revealed that a higher number of libraries (66.6%) are well ventilated followed by 56.2% that had properly reinforced and well spaced bookshelves and then 56.2% that had adequate lighting. It was also noted that very few libraries (12.5%) had emergency clearly labelled. The findings show that most secondary schools in Homa Bay County have libraries that have not met some safety requirements. According to Asian Disaster Management News (2008) a library that meets safety standards should be rightly located in a quiet place and should have sufficient space in addition to being well ventilated and safe from invasion by destructive insects and pests. Should also have adequate ventilation and lighting; have wide alleys of passageways to facilitate evacuation; have spacious room for easy movement; dusting books done regularly, preferably every three days and have properly reinforced and well spaced bookshelves**.**

4.8.10 State of the school Administration Block

Administration blocks are important structures in schools. It is the first station of call for all visitors to the school. It is also the storehouse of all the vital school records and equipment. The researcher carried out an assessment of the school administration blocks to establish whether they meet safety standards. The results are as indicated in Table 4.28.

Table 4.28: State of the school Administration Block

N = 48

Response	Frequency	Percentage
Have a fire extinguisher.	22	45.8
Fire-proof cabinets for the storage of essential office materials and documents	14	29.1
The doors and windows are burglar proof.	32	66.6

The findings in Table 4.28 show that 45.8% of schools have administration blocks with fire extinguishers meaning and a higher number do not have. Only 29.1% have fire-proof cabinets for the storage of essential office materials and documents. The findings indicate that most school administration blocks in secondary schools in Homa Bay County have not met all the safety requirements.

According to Kaufman et al (1999) an ideal school administration block should put into consideration the prevailing security situation of the school environment and the needs of the school. There should be provisions of offices for key school personnel such as the head teacher and deputy head teacher, senior teacher, bursar and the supporting secretarial staff. In addition, the school should have a staff room and registry. It should be centrally located and not far from classrooms. The doors and windows should be burglar proof. Each administration block, like any other block, should have a fire extinguisher. Provisions should be made to acquire fire-proof cabinets for the storage of essential office materials and documents. There should be provisions for easy access to legal and

administrative documents such as the Educational Act, the Children's Act, Sexual Offences Act, the Public Health Act, Code of Regulations, school rules and any other documents accorded importance by the school authorities.

Overall, the achievement of the right infrastructure in schools requires the collective efforts of different stakeholders. Nonetheless, the following guidelines would be necessary: No physical infrastructure should be constructed or occupied without consultations with and approval of the Ministry of Public Works, Ministry of Education, and Ministry of Health (Public Health Department). There should be close and cordial working relationship between the school, parents, sponsors and members of the community with regard to construction, utilisation and maintenance of the school buildings. A school site plan should be developed and be available at all times (Ministry of Education, 2005).

4.8.11. School buses/Vehicles safety standards

A number of schools in the country have school buses/vehicles. The researcher therefore sought to establish whether schools with school buses/vehicles have adhered to safety standards. The findings are as discussed in the following sub-sections.

4.8.12 School with school buses/vehicles

The researcher sought from principals if their schools have school buses/vehicles. The results are as highlighted in Table 4.29.

Table 4.29: School with school buses/vehicles

N=48

Response	Frequency	Percentage
Have school bus/vehicles	25	52.3
Do not have school bus/vehicles	23	47.7
Total	48	100.0

The findings reveal that a higher number of schools (52.3%) have school buses/vehicles. This is an indication that most secondary schools in Homa Bay County have acquired school buses/vehicles.

4.8.13 State of school buses/vehicles

The researcher asked principal to provide information on the state of school buses/vehicles. The findings are as presented in Table 4.30.

Table 4.30: State of school buses/vehicles

N=25

Response	**Frequency**	**Percentage**
School vehicles that are comprehensively insured	25	100.0
School vehicles driven by qualified drivers	23	92.0
School bus/vehicle fitted with appropriate seats and seatbelts.	18	72.0
School vehicles regularly serviced and maintained	15	60.0
School bus/vehicle with First Aid kits	10	40.0
School bus/vehicle driven at a required speed	8	32.0

Not all secondary schools had vehicle and therefore the sample for this table is computed from only 25 schools that had vehicles. The results revealed that all school vehicles are comprehensively insured followed by 92.0% that are driven by qualified drivers. It was however established that only 32.0% school buses/vehicles are driven at a required speed. This is an indication that most schools in Homa Bay County have school buses/vehicles that meet some required safety standards however most of these school vehicles do not have functioning speed governors. According to Redican, Olsen, & Baffi (1993) vehicles should be comprehensively insured and regularly serviced and maintained. School bus/vehicle should also be fitted with appropriate seats and seatbelts and driven at a required speed.

There is also a requirement that the driver and his/her assistant must have the necessary PSV qualifications, a valid driving licence, experience and a certificate of good conduct. The school bus/vehicle must also be fitted with appropriate seats and seatbelts; have a First Aid kit and that the assistant shall be responsible for ensuring proper behaviour of the learners, assist them in boarding and alighting from the bus and ensure proper sitting arrangements. The school bus/vehicle should clearly display on the outside the name, address and telephone number of the school and at all times be driven at not more than 60km/hr, hence the mandatory speed governors.

The speed limit within the school compound for any motorised vehicle should be 5km/hr and for any school excursions or field trips, the parents should give their consent in writing and an accompanying teacher is mandatory. School administrators should ensure

that Ministry of Education guidelines on school travel for learners are strictly adhered to. According to Rasiah (2011) in a study on disaster preparedness in public secondary schools in Isiolo District most public secondary schools in Isiolo District are yet to put in place measures to ensure disaster preparedness. Just like some secondary schools in Homa Bay County are yet to have their speed governors functional.

CHAPTER FIVE

SUMMARY OF THE STUDY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, conclusion, recommendations and suggestions for further research.

5.2 Summary of Study

The study examined disaster awareness and preparedness of secondary schools in Homa Bay County. This was done by first identifying types of disasters found in secondary schools, levels of disaster awareness and preparedness, administrative strategies put in place by school managers to enhance disaster awareness and preparedness and ways through which school facilities have been modified to cope with school disasters. The study adopted a descriptive survey design and targeted 52 principals, 420 secondary schools teachers and 6,000. All 52 principals were purposively selected, 84 teachers and 600 students were sampled for the study. Data were collected using questionnaires and an observation schedule. Quantitative data from closed-ended items were analysed using frequency counts. Frequencies and percentages obtained were presented in frequency distribution tables and figures which were then internalized and described.

The findings of the study revealed that secondary schools in Homa Bay County are faced with a variety of disasters with varying magnitudes most of which are association to heavy downpours such as floods as stated by 85.4% of principals. The study also examined extent of planning for disaster awareness in the Homa Bay County and

established that although a number of workshops and seminars on disaster awareness have been planned and conducted on rear occasions, they have not received regular attendance from principals and teachers given that 81.4% of teachers have never attended these workshops.

It was also established that crucial disaster awareness information materials such as school safety manuals were not available in most secondary schools (70.9%).It was therefore concluded that extent of planning for disaster awareness in these secondary schools in Homa Bay County were inadequate to effectively prevent and mitigate disasters; a case in point was that most schools (91.4%) dispose waste materials by burning them in the open thus exposing these schools to fire disasters and that quite a number of schools (64.5%) are storing flammable substances in places where they are likely to be exposed to fire. It was also found that most students (75.4%) are not conversant with road safety rules as some of them are flouting these rules which might expose them to transport related disasters.

On administrative strategies to promote disaster awareness and preparedness, the study revealed little efforts have been done by school administrations to this end. Disaster awareness guidelines were not available in a large number of schools (89.6%) and that most schools (75.0%) do not even have school safety sub-committees. However, it was established that most school secondary schools (54.1%) are conducting regular spot checks in dormitories when students are in class, in the field or during other outdoor activities. Most school administrations (52.0%) also take roll calls very often before students retire to bed on a regular basis and that there are regular patrols by the school

security personnel to ensure safety in schools. The study further revealed that inspection of hygiene standards of dormitories is also being conducted very often in most schools (50.0%).

The study also sought to establish the levels of disaster preparedness and established that most secondary schools in Homa Bay County are not adequately prepared to deal with disasters as a result of floods, landslides, thunderstorm/lightening related disasters, earthquake related disasters, disasters as a result of strong winds, fire related disasters, and disasters arising from poisonous chemical emissions and severe pollution.

The study also assessed school physical facilities in relation to disaster preparedness and established that most schools have not modified their school physical facilities in line with safety requirements. Most schools (43.8%) in the County have overcrowded classrooms with a number of them (54.8%) having narrow doors which may make it hard for students to evacuate in case of an emergency. A number of schools (39.5%) also have doors that open inwards thus making it difficult to force them open from inside in case of emergency. The study also revealed that half of the storied buildings have stairways on both ends of the buildings while the other half has stairways on only one side of building. This means that incase of fire starting from the side of the stairways, students will lack an alternative evacuation exit.

The researcher also observed that 28.5% of the stairways have items kept in them which may become obstacles during evacuation. It was also established that most classroom corridors (58.3%) had items such as dust bins, timber and broken furniture kept in them

which not only pose danger to teachers and students but may also be obstacles during evacuation. It was also observed that none of the stairways had been modified to serve students with special needs which will make it hard to evacuate them during emergency. It was further observed that 57.2% of stairways did not have handrails which might make persons to fall and they have nowhere to hold when climbing or when descending the stairs. Lastly, it was observed that half of the stairways that had handrails the handrails were not firmly fixed posing more danger to students.

The study further shows that 33.4% of the classroom corridors were not wide enough and may therefore present a challenge during evacuation. It was also observed that 41.7% of the classroom corridors were not well lit. The findings also revealed that most secondary schools (83.7%) have classrooms with windows which do not meet safety standards as they are fitted with grills. Although most dormitories had met some safety requirements, it was discovered that majority of dormitories (88.2%) have windows with grills. Most of them (73.6%) did not have functioning fire extinguishers, lacked clearly labelled emergency exits and had not fitted emergency alarms. It was observed that most schools (41.6%) had toilets blocks close to boarding and tuition facilities and that in majority of schools the state of sanitary facilities does not meet the required safety standards thus exposing members of the school community to hygiene-related disasters.

Most schools also have libraries and administration blocks that do not meet some safety requirements. The findings indicate that most school administration blocks in secondary schools in Homa Bay County have not met all the safety requirements. The study lastly revealed that most secondary schools in Homa Bay County have school buses/vehicles

that meet some required safety standards however most of these school vehicles do not have functioning speed governors.

5.3 Conclusions of the study

This study sought to establish levels of disaster awareness and preparedness in secondary schools in Homa Bay County and the results has shown that the secondary schools, to a lesser extent, taken into account the importance of disaster awareness and preparedness. This is accounted by poor attendance of workshops and seminars on disaster awareness by teachers and students, school safety manuals being unavailable in most schools, lack of school safety sub-committees, coupled with little efforts done by school administrations to promote disaster awareness and preparedness. These scenarios pose sense of urgency to Education Department in Homa Bay County to make some adjustments within the secondary school systems so that the schools operate in tandem with the Ministry of education (2008) guidelines.

5.4 Recommendations of the study

For effective disaster awareness and preparedness of secondary schools in Homa Bay County, the study outlines the following recommendations:

a) Every secondary school needs to have a plan for development of capacity for the staff and students to be better prepared in responding to disaster.
b) School administrations and other stakeholders ought to provide necessary information and materials support to schools to promote disaster preparedness.

c) The Principals should be compelled when constructing any new school buildings to use certified building plans obtained from the Ministry of Public Works.

d) The Ministry of education officials should not only over emphasise curriculum inspection but also intensify inspection of existing school facilities to ensure that they comply with safety requirements.

e) School administration need to protect investment in physical infrastructure and plan for reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of disaster.

5.5 Suggestion for Further Research

Putting in mind the limitations and delimitations of the study, the researcher suggest that:

i. A study assessing the training needs of Ministry of education officials and principals regarding disaster awareness and preparedness in secondary schools needs to be carried out.

ii. A similar study needs to` be carried out in other parts of the country given that disasters can possibly occur in any school within the country.

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APPENDICES

APPENDIX A

LETTER OF INTRODUCTION

University of Nairobi,

Faculty of education,

Department of educational

Administration & planning,

P.O.Box 30197.

Nairobi.

6th June 2010.

Dear Sir/Madam,

RE: DISASTER AWARENESS AND PREPAREDNESS OF SECONDARY SCHOOLS IN HOMA BAY COUNTY,KENYA

I am a post graduate student pursuing PhD degree in educational planning at University of Nairobi. I am conducting research on disaster awareness and preparedness of secondary schools in Homa Bay County, Kenya.

You and your school have been selected for success of this study. Please cooperate and assist as much as you can.

Yours sincerely,

Onyango Maurice Akumu

APPENDIX B

QUESTIONNAIRE FOR SCHOOL PRINCIPALS

This study is investigating disaster awareness and preparedness of secondary schools in Homa Bay County .You are requested to participate by filing this questionnaire. Kindly answer all questions honestly as possible. Do **NOT** write your name or that of the school anywhere in this questionnaire to enhance maximum confidentiality

Instruction

Please indicate the correct option by a tick **(√)** in appropriate box provided or fill in where appropriate.

1. Please indicate the type of your school.

   Girls Day [ ]

   Mixed day [ ]

   Boys boarding [ ]

   Day and boarding mixed [ ]

2. Please indicate the number of streams of your school.

   Single stream [ ]

   Double stream [ ]

   Triple stream [ ]

   Four streams [ ]

3. Indicate the types of disasters common in your school by ticking where appropriate

Fire related disasters	
Rain related disasters	
School playground related disasters	
Health/hygiene related disasters	
Transport related disasters	
Physical facility related disasters	

4. Indicate by ticking disasters that have ever occurred in your school.

Disaster	**Very Frequent**	**Frequent**	**Rare**	**Never**
Rain related disasters				
Physical facility related disasters				
Transport related disasters				
Fire related disasters				
Health/hygiene related disasters				
School playground related disasters				

5. How frequent have you organized workshops/seminars in your school?

Very frequent	
Frequent	
Rarely	
Never	

6. Are you provided with courses, in-service and refresher courses on safety assessment

Yes	
No	

7. Do you have a school safety standard manual in your school?

Yes	
No	

8. Please indicate the methods used in your school to dispose waster materials.

Burning in the school composite pit.	
Collected by waste collection companies	
Burning in the incinerator	
Left laying all over the school compound	

9. Please indicate how you normally store flammable substances in your school.

Stored in the school stored	
Stored in the laboratory	
Stored in the school kitchen	
Stored in class	
Stored in offices	

10. How often do you repair and maintain your electrical appliances?

Very regularly	
Regularly	
Rarely	
Never	

11. Have you instituted a disaster response team in your school?

Yes	
No	

12. Have your put in place a school safety sub-committee?

Yes	
No	

13. Do you have early disaster warning mechanisms in your schools?

Yes	
No	

14. Have you put in place emergency response procedures in your school?

Yes	
No	

15. Please indicate the disaster response guidelines you have in your school.

A telephone tree list including all employees (include e-mail address, pagers, mobile phones numbers).	
Fire safety guidelines	
Guidelines on safety during floods	
Thunderstorms and lightning	
Schedule for disaster drills	
Guidelines on safety during Poisonous Chemical Emissions/Severe Pollution	
Landslides safety guidelines	
Guidelines on Safety during an Earthquake	

16. How often are spot checks conducted in dormitories in your school?

Very often	
Often	
Rarely	
Never	

17. How often are roll calls taken in your school before students retire to be?

Very often	
Often	
Rarely	
Never	

18. How often are security patrols conducted in your school by security personnel

Very often	
Often	
Rarely	
Never	

19. How often do you conduct inspection of hygiene standards of dormitories in your school?

Very often	
Often	
Rarely	
Never	

20. Do you have flood safety guidelines in your school?

Yes	
No	

21. Do you have flood safety guidelines in your school?

Response	
Available	
Not available	

22. Do you have safety guidelines during thunderstorms and lightening?

Yes	
No	

23. Do you have safety guidelines during earthquakes in your school

Yes	
No	

24. Do you have safety guidelines during strong winds

Yes	
No	

25. Do you have safety guidelines for fire disasters?

Yes	
No	

26. Do you have safety guidelines for poisonous chemical emissions/severe pollution in your school?

Yes	
No	

27. Does your school have a school bus/vehicle?

Yes	
No	

28. If yes, please tick where appropriate to describe the state of your school bus/vehicle.

School vehicles that are comprehensively insured	
School vehicles driven by qualified drivers	
School bus/vehicle fitted with appropriate seats and seatbelts.	
School vehicles regularly serviced and maintained	
School bus/vehicle with First Aid kits	
School bus/vehicle driven at a required speed	

THANKS FOR YOUR PARTICIPATION

APPENDIX C

QUESTIONNAIRE FOR TEACHERS

This study is investigating disaster awareness and preparedness of secondary schools in Homa Bay County. You are requested to participate by filing this questionnaire. Kindly answer all questions honestly as possible. Do **NOT** write your name or that of the school anywhere in this questionnaire to enhance maximum confidentiality

Section A: Demographic Information.

Please indicate the correct option by a tick **(√)** in appropriate box provided or fill in where appropriate.

1. Please indicate your highest professional qualification.

Bachelor of Education	
Bachelor of Arts	
Bachelor of Arts with PGDE	
Master of Education	
Bachelor of Science and PGDE	
EAACE/KCE/KCSE/KACE	

2. Have you ever attended workshops/seminars on disaster awareness and preparedness?

Yes	
No	

3. If yes, indicate how often you have attended these seminars.

Very frequent	
Frequent	
Rarely	
Never	

APPENDIX D

QUESTIONNAIRE FOR STUDENTS

This study investigates disaster awareness and preparedness of secondary schools in Homa Bay County. You are requested to participate by filing this questionnaire. Kindly answer all questions honestly as possible. Do **NOT** write your name or that of the school anywhere in this questionnaire to enhance maximum confidentiality.

Please indicate the correct option by a tick (√) in appropriate box provided or fill in where appropriate.

1. What is the type of your school?

National Boys	[ ]	National Girls	[ ]
Mixed Day	[ ]	Provincial Boys Boarding	[ ]
Provincial	[ ]	Girls Boarding	[ ]
Mixed Boarding	[ ]	Partly/Boarding Mixed	[ ]

2. Are you allowed to posses flammable objects like matchboxes and lamps in your school?

Yes	
No	

3. Have you ever received any lectures on the dangers of fire?

Yes	
No	

4. If yes, Please indicate which methods have been used to deliver these lessons.

Method of sensitization	
During normal teaching	
Fire management and prevention talks	
Conducting fire drills	
School assemblies	

5. Have you been taught about road safety rules?

Yes	
No	

6. Please indicate whether you are involved in the following practices when going to or from school.

Response	
I who walk on the sidewalks or roadside.	
I board or alight from a moving public service vehicle	
I play on the roads or close to the roads.	
I always walk in the direction of oncoming traffic	
I cross the roads only at designated places, such as zebra crossing, footbridges or tunnels	
I hang on the doors of moving vehicles	
I sometimes stick out their heads or hands when inside a motor vehicle	
I a bicycle which is in good condition and well maintained	
I attempt stunts while riding a bicycle	
My bicycle has reflectors and lights	
I ride bicycles in the same direction as the flow of the motor traffic	
I sit and fasten seat belts when using ‘matatus’ or other public service vehicles.	

THANKS FOR YOUR PARTICIPATION

APPENDIX E

OBSERVATION SCHEDULE

The researcher observed the following school physical facilities

STATE CLASSROOMS	
Spacious enough	
Not spacious enough	
STATE OF CLASSROOM DOORS	
Wide enough	
Not wide enough	
Open inwards	
Open outwards	
Schools with storied buildings	
Have storied buildings	
Do not have storied buildings	
STATE OF STAIRWAYS ON STORIED BUILDINGS	
Wide enough	
Not wide enough	
Located on both sides of the building	
Located on one side of the building	
Have items kept on them	
Have no items kept on them	
Have been modified to serve learners with special needs	
Have not been modified to serve learners with special needs	
STATE OF STAIRWAYS ON STORIED BUILDINGS	
The stairways have handrails	
The stairways have no handrails	
Have strong hand rails	
Have weak handrails	

STATED OF STAIRWAYS ON STORIED BUILDINGS	
Wide enough	
Not wide enough	
Have items kept on them	
Have no items kept on them	
Are well ventilated and lit	
Are not well ventilated and lit.	
STATE OF CLASSROOM WINDOWS	
They have grills	
They do not have grills	
They are easy to open	
They are not easy to open	
GENERAL STATE OF CLASSROOMS	
Floors are level	
Floors are kept clean.	
Walls are well maintained	
Desks are arranged in a manner that facilitates easy and orderly movement of learners in the classroom	
Properly lit and ventilated	
Floors have cracks	
The furniture especially the desks appropriate for use	
Electrical sockets positioned beyond the reach of learners	
Fitted with serviced fire extinguishers	
STATE OF DORMITORIES	
Dormitories locked when students are in class or playgrounds	
Dormitory windows with grills.	
Adequate beds	
Doorways wide enough	
Dormitories kept clean	
Doors open outwards	

STATE OF DORMITORIES	
Dormitories with doors on both ends.	
Dormitories well ventilated	
Dormitory windows easy to open outwards.	
Dormitories with emergence doors in the middle.	
Corridors well spaced	
Bunk beds strong and firm.	
Adequate space between beds	
Functioning fire extinguishers placed at both exits	
Emergency doors clearly labelled “Emergency exit”	
Alarms fitted and easily accessible.	
DISTANCE OF TOILETS FROM TUITION AND BOARDING FACILITIES	
2 - 4 metres	
5 - 7 metres	
8 - 10 metres	
More than 10 metres	
STATE OF SANITARY FACILITIES	
High standards of cleanliness	
Pit latrines deep enough	
Good distance of pit latrines from water sources	
Mixed schools, girls’ sanitation areas distant from boys’	
Safe and effective disposal of sanitary wear.	
Latrines well ventilated	
Sanitary facilities modelled to serve learners with special needs	
Sanitary facilities and equipment should be in the best state of repair	
Proper protective measures for cleaners of sanitary facilities (e.g. provision of gloves)	
Soap and tap water or water cans fitted with taps set outside the toilets for washing hands after use of these facilities.	

STATE OF SCHOOL LIBRARIES	
Have sufficient space	
Well ventilated	
Fitted with functioning fire extinguishers	
Have well-labelled emergency exits	
Adequate lighting	
Wide alleys of passageways to facilitate evacuation	
Dusting books regularly, preferably every three days	
Properly reinforced and well spaced bookshelves	
STATE OF THE SCHOOL ADMINISTRATION BLOCK	
Have a fire extinguisher.	
Fire-proof cabinets for the storage of essential office materials and documents	
The doors and windows are burglar proof.	