DISASTER PREPAREDNESS IN PUBLIC SECONDARY SCHOOLS IN GITHUNGURI DISTRICT, KIAMBU COUNTY, KENYA

BY

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E55\12564\2009

A PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION, KENYATTA UNIVERSITY.

DECEMBER, 2011
DECLARATION
This project is my original work and has not been presented for a degree in any other University.

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To my husband, F. Mbaabu for his moral support and encouragement during my pursuit for higher education and to our children Lee and Mukami who were a source of encouragement to me.
ACKNOWLEDGEMENTS

I would like to express my gratitude for the advice and co-operation of my supervisors, Dr. F. Njuguna and Dr. G. A. Onyango who provided efficient and effective supervision for the completion of this project. They deserve special thanks and recognition not only for what I have learnt under their supervision, but also their dedication, effort and encouragement.

My special thanks go to all academic staff of Kenyatta University who participated in this study.

May God bless you all.
ABSTRACT

The purpose of the study was to investigate disaster preparedness in public secondary schools in Githunguri District. This study was prompted by the many disasters that have affected schools in the district especially fire disasters, therefore the need to determine how well prepared the schools are to handle disasters. The objectives of the study were: to examine disaster preparedness policies in schools; to assess disaster awareness among the school community members; to identify the disaster preparedness facilities and equipments; to establish measures put in place to enhance disaster preparedness; and to come up with mechanisms on how to enhance disaster preparedness. The study was based on the systems theory and it adopted a descriptive survey design because it provided the real picture about the existing disaster preparedness conditions without manipulating the variables. The target population was all the 28 public secondary schools in Githunguri district. Stratified random sampling technique was adopted to select 12 out of the 28 secondary school to participate in the study. Participants in the study were all the principals and five teachers from each of the 12 sampled secondary schools in Githunguri District. The instruments used for data collection were questionnaires. Prior to the actual data collection procedure, a pilot study was carried out to ascertain the reliability and validity of the instruments. Data were both qualitative and quantitative. Qualitative data collected were put under themes consistent with the research objectives. Quantitative data were coded and entered in the computer for analysis using the Statistical Package for Social Sciences (SPSS). Descriptive statistics such as percentages, means and frequencies were used to analyze the data. The results of data analysis are reported in summary form using frequency tables, bar graphs and pie charts. The study revealed that 66.7 percent of the schools had disaster management policies which turned out to be ineffective. The study established that the most (41.7 percent) common disaster faced in schools was fire. It was also established that 80 percent of the schools had adequate security lighting and first aid kits accessible by all. Regarding disaster management facilities and equipment, it was established that 86.7 percent of schools had fire extinguishers and fire alarms. However, it emerged that 61.7 percent of the equipment were hardly replaced over time, were in bad state and not repaired thus making them useless in times of emergency. The study established that 75 percent of the schools had well ventilated and lit corridors as well as open (unobstructed) escape routes, therefore making evacuation easy in times of disaster. The study recommended that: Ministry of Education should organize frequent workshops and seminars for school community members to teach them on how to manage disasters as well as how to perform simple first aid to injured people. Each school should have disaster awareness and preparedness department whose head should be recognized by the Teachers Service Commission. Members of this department should be conversant with disaster management skills and first aid measures. Further, the MoE should inspect and set ministerial regulations and guidelines on safety issues in all schools, therefore ensuring that all schools have put in place mechanisms and measures required.
TABLE OF CONTENTS

DECLARATION ............................................................................................................................... ii
DEDICATION ............................................................................................................................... iii
ACKNOWLEDGEMENTS ............................................................................................................. iv
ABSTRACT ................................................................................................................................. v
TABLE OF CONTENTS ................................................................................................................. vi
LIST OF TABLES ......................................................................................................................... viii
LIST OF FIGURES ...................................................................................................................... ix
ABBREVIATIONS ...................................................................................................................... x
CHAPTER ONE............................................................................................................................ 1
INTRODUCTION ......................................................................................................................... 1
1.2 Statement of the Problem ........................................................................................................ 5
1.3 Purpose of the Study ................................................................................................................ 6
1.4 Objectives of the Study .......................................................................................................... 6
1.5 Research Questions ............................................................................................................... 6
1.6 Significance of the Study ...................................................................................................... 7
1.7 Limitations and Delimitations of the Study ........................................................................... 7
1.7.1 Limitations of the Study ................................................................................................ 7
1.7.2 Delimitation of the Study .............................................................................................. 8
1.8 Assumptions of the Study .................................................................................................... 8
1.9 Theoretical Framework ....................................................................................................... 8
1.10 Conceptual Framework ..................................................................................................... 11
1.11 Definition of Central Terms ............................................................................................ 12
CHAPTER TWO .......................................................................................................................... 13
LITERATURE REVIEW .............................................................................................................. 13
2.1 Introduction ......................................................................................................................... 13
2.2 Types of Disasters, Causes and Effects ............................................................................... 13
2.3 Schools and Disaster Vulnerability ..................................................................................... 17
2.4 Disaster Preparedness in Schools in other Parts of the World ............................................. 20
2.5 Disaster Preparedness in Kenyan Secondary Schools .......................................................... 22
2.5.1 Disaster preparedness plans .......................................................................................... 22
Flood Safety .............................................................................................................................. 24
2.5.2 Personnel Training and Capacity Development ........................................................... 27
2.5.3 Disaster Facilities and Equipments ............................................................................... 30
2.6 Summary ............................................................................................................................. 31
CHAPTER THREE ..................................................................................................................... 33
RESEARCH METHODOLOGY ............................................................................................... 33
3.1 Introduction ......................................................................................................................... 33
3.2 Research Design ................................................................................................................ 33
3.3 Location of the Study ......................................................................................................... 33
3.4 Target Population .............................................................................................................. 34
3.5 Sample and Sampling Procedure ...................................................................................... 34
Table 3.1: Sampling matrix for the study .................................................................................. 34
3.6 Research Instruments ........................................................................................................ 35
3.7 Piloting of Research Instruments ...................................................................................... 36
3.7.1 Validity of Instruments ............................................................................................... 36
3.7.2 Reliability of Research Instruments .......................................................................... 36
3.8 Data Collection Procedure ............................................................................................... 37
3.9 Data Analysis ..................................................................................................................... 37
LIST OF TABLES

Table 3.1: Sampling matrix for the study .................................................................34
Table 4.1: Gender of the Respondents .................................................................40
Table 4.2: Teachers and Head Teachers Working Experience .........................40
Table 4.3 Time Duration Served as Teachers and Principals in Current Schools ..41
Table 4.4: Status of Schools ..................................................................................42
Table 4.5: Enrolment Levels ..................................................................................43
Table 4.6: Core Highlights of the Disaster Preparedness Policy in Schools ........45
Table 4.7: Contents found in the Disaster Emergency Plan .................................47
Table 4.8: Disaster Preparedness Levels ...............................................................49
Table 4.9: Disaster Preparedness .........................................................................50
Table 4.10: Schools’ Reactions to Disasters .........................................................51
Table 4.11: Roles Played in Disaster ....................................................................52
Table 4.12: Impacts of the Disaster in Schools .....................................................53
Table 4.13: Facilities and equipment for Disaster Preparedness .........................54
Table 4.14: Frequency of Repair/Services .........................................................55
Table 4.15: Adequacy of Evacuation Measures ...................................................56
Table 4.16: Training Received in Disaster Management .....................................58
Table 4.17: Suggestions on how to Enhance Disaster Preparedness in schools …59
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Conceptual Framework</td>
<td>11</td>
</tr>
<tr>
<td>4.1</td>
<td>Type of Schools</td>
<td>42</td>
</tr>
<tr>
<td>4.2</td>
<td>Schools with Disaster Management Policy</td>
<td>44</td>
</tr>
<tr>
<td>4.3</td>
<td>Types of Disasters</td>
<td>48</td>
</tr>
<tr>
<td>4.4</td>
<td>Disaster Management Equipment</td>
<td>54</td>
</tr>
<tr>
<td>4.5</td>
<td>Schools with Trained Personnel in Disaster Management</td>
<td>57</td>
</tr>
</tbody>
</table>
### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADPC</td>
<td>Asian Disaster Preparedness Center</td>
</tr>
<tr>
<td>F.F.F.</td>
<td>Fire Fighter Forum</td>
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<td>FEMA</td>
<td>Fire Emergency Management Agency</td>
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<tr>
<td>IFRC</td>
<td>International Federation of Red Cross</td>
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<tr>
<td>ISDR</td>
<td>International Strategy for Disaster Reduction</td>
</tr>
<tr>
<td>MoE</td>
<td>Ministry of Education</td>
</tr>
<tr>
<td>NCEF</td>
<td>National Clearinghouse for Educational Facilities Organizations</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UNESCO</td>
<td>United Nations Educational Scientific and Cultural Organization</td>
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</table>
CHAPTER ONE

INTRODUCTION

Background to the Study

Disasters have always co-existed with civilization. According to UNDP (2008), there is no country that does not stand the threat of a disaster, though they may be threatened at different levels. Disaster is a serious disruption of the functioning of the society causing widespread human, material or environmental damage and losses which exceed the ability of the affected community to cope with using their own resources (ISDR, 2002). Danger has often resulted in disaster or disastrous events around the world; even in the face of advanced science and technology. Giddens (1991) notes that the body is in some sense perennially at risk even in the most familiar surroundings. This points to the inseparability of danger and humankind and by extension the inevitability of disasters. Munyasi (2002) notes that disasters such as earthquakes, floods, lighting, drought, and fire have an effect on child care, health, nutrition, water supplies, hygiene and sanitation, food production, shelter and security. Due to the great negative impact disasters have on the lives of those affected, there is an urgent need for improved disaster reduction strategies.

Rising frequency, amplitude and number of natural disasters and attendant problems coupled with loss of human lives like the Mexico earthquake of 1985, prompted the general Assembly of the United Nations (UN) to proclaim 1990s as the international Decade for Natural disaster reduction (Alexander, 2002). Man-made disasters are a major contributor to human suffering. The Columbine High school Massacre of 1999 where two senior students killed twelve students and one teacher and then committed suicide was one of the deadliest disasters in the United States of America (Brown,
1999). Following this incident, schools in the United States instituted new security backpacks, metal detectors and computer generated identity cards among others.

In 2007, more than 30 people were killed on the campus of Virginia Polytechnic Institute, the worst such rampage in U.S. history (De Voe, Ruddy, Miller, Planty, Snyder, Uhart, and Rand, 2004). America is not alone in its concern with school violence and school safety. Countries as far apart as Australia, Belgium, France, South Africa, and the United Kingdom have, in recent years, experienced tragic events in schools that have alarmed communities and governments alike (Ibid).

Disaster occurrences greatly hamper the education process in many ways, with human loss and injury, social upheaval, school property damage and closings, and often with children having to leave school for long periods in the recovery period - their families needing their help in meeting basic needs (FEMA, 2007). Some of these children will not get another chance to attend school, which deepens the vicious cycle of educational lack and vulnerability (Ibid). According to the International Strategy for Disaster Reduction (ISDR, 2010), in many earthquakes around the world, school buildings which were not built as per hazard resistant standards collapsed, causing severe setback to primary education. Examples of earthquakes around the world include: Skopje, Yugoslavia in 1963, where 44 schools were destroyed (57 percent of school building stock); El Asnam, Algeria in 1989 where 80 schools collapsed or were severely damaged; Pereira, Colombia in 1999, whereby 74 percent of schools were damaged; Xinjiang, China in 2003, where dozens of schools collapsed; and Boumerdes, Algeria in 2003, where 130 schools suffered extensive to complete damage (ISDR, 2010).
The earthquake and subsequent tsunami on 26 December 2004 devastated communities and schools in coastal regions, primarily in Indonesia, the Maldives, Sri Lanka, India and Thailand (UNESCO, 2007). Following the October 2005 earthquake in northern Pakistan, between 17,000 and 20,000 students were reportedly killed in the collapse of some 10,000 school buildings (Asian Disaster Preparedness Center, 2008). Children comprised half of more than 75,000 deaths. Over 1,000 health care facilities were also destroyed, with high casualties among patients and health care workers. In the Gujarat 2001 earthquake 11,600 schools were destroyed or severely damaged. The main shock occurred during a national holiday where tragic incidents involving students in schools for celebrations comprised half of more than 20,000 dead (ADPC, 2008). Recently in March 2011, an earthquake hit Japan causing a deadly tsunami which led to deaths of thousands of people, destruction of schools and property. Nuclear reactors were destroyed leading to threat of exposure to nuclear radiation.

In Africa, violent incidences have been reported mostly in South African black-township schools and in the killings and destruction in Kenya (NACADA, 2002). Students are victims of a spectrum of problem behaviors at school, ranging from minor disciplinary problems to criminal victimization. With the tropical climate and unstable landforms coupled with a high population density, poverty, illiteracy and lack of adequate infrastructure, Kenya is one of the most vulnerable developing countries to suffer very often from various natural as well as technological (human-made) disasters which strike causing a devastating impact on human life, economy and environment (Alexander, 2002). These disasters include drought, floods, fires, landslides, transportation accidents, terrorist attacks and the post-election violence to mention but a few. For instance, during the 1997–1998 El Niño events, most parts of
Kenya received 2 to 12 times the monthly long-term mean rainfall amount (Karanja and Mutua, 2000). The heavy rainfall resulted in floods and landslides in various parts of the country (Ng'ecu and Mathu 1999), with consequent effects on education sector as well as loss of lives.

Floods have had devastating impacts on schools with as many as 350 schools and a student population of about 150,000 affected (UNICEF, 2007). Floods have severely damaged many schools, water and sanitation facilities, leaving behind a pungent smell and the risk of diarrhoea diseases including cholera. The strong winds that accompanied the rain blew off the roofs in some schools in Emuhaya district compromising the safety of the students (UNICEF, 2007).

In addition to natural disasters, Kenya experiences a number of man-made disasters in schools. For instance, several fatal incidences have brought an urgent need for the government and the public to take action and deal with the problem of violence in our learning institutions and the youth in general (Republic of Kenya, 2001). Examples of such disasters include the 1991 tragedy at St. Kizito Secondary school in Meru where 19 girls were killed in an orgy of rape and subsequent stampede when boys from a neighbouring school invaded them. In 1998 there was the Bombolulu Secondary School disaster in which 23 girls were burnt to death. Then in 1999 there was the Nyeri High School tragedy where fellow students attacked and killed four prefects (Ibid).

Another disaster occurred in 2001 at Kyanguli Secondary School in Machakos where 58 students perished in a night inferno started by some students using petrol (MoE, 2001). There have also been many road accidents involving school buses where precious young lives have been lost or seriously injured. In 2000 a school girl from
Machakos Girls’ High school lost her life in an accident while travelling from the Drama festival which had been held in Nairobi. This made the state to issue a circular requiring all school teams to travel only during the day, before 6.00pm (Orido, 2010). Such tragedies seem to suggest that schools are not adequately prepared or are ill-equipped to deal with disasters. Efforts by the government of Kenya to formulate the National Disaster management policy to emphasize proactive and preventive strategies in addressing disaster situations seem not to be bearing fruits.

The post-election violence of 2007/2008 adversely affected the education sector in Kenya by destruction of schools, displacement of learners and teachers. Statistics by the Ministry of Education (2008) indicated that a total of 62,848 primary school pupils and 9,200 secondary school students were displaced as a result of the violence. In addition, 26 primary schools and four secondary schools in different parts of the country were burnt (Ministry of Education, 2008). Such incidences call for schools to be adequately equipped to deal with disasters. As Nderitu (2009) notes, despite the stringent safety measures put in place by schools, disasters still occur. However it is the degree of preparedness of the schools’ entire system that makes the critical difference. It is, therefore, imperative that educational stakeholders foster disaster preparedness to either minimize or eliminate risky conditions or threats.

1.2 Statement of the Problem

The above background has generated great public concern and fostered a widespread impression that secondary schools are unsafe for many students. The situation is not made any better by the constant increase in the number of students admitted into the public secondary schools each year, which cannot accommodate them. This is posing new challenges to school management. Therefore, there is an urgent need to
investigate how well the schools are prepared to handle disasters. Consequently, this study investigated disaster preparedness in public secondary schools in Githunguri district.

1.3 Purpose of the Study

Based on the statement of the problem, the purpose of this study was to investigate disaster preparedness in public secondary school in Githunguri District, with a view of making recommendations on how schools should be equipped with skills for emergency preparedness and response to prevent and deal with disasters when they occur.

1.4 Objectives of the Study

The following were the objectives of the study:

i. To examine disaster preparedness policies in schools.

ii. To assess the general disaster awareness among the school community members.

iii. To identify the disaster preparedness facilities and equipments available in the schools.

iv. To establish measures put in place to enhance disaster preparedness in schools.

v. To come up with mechanisms on how to enhance disaster preparedness in schools.

1.5 Research Questions

The study was guided by the following questions.

i. What disaster preparedness policies are in place in public secondary schools?

ii. What is the level of disaster awareness among the school community?

iii. Which disaster preparedness facilities and equipment are installed in schools?
iv. What measures have been put in place to enhance disaster preparedness in schools?

v. What are the suggestions of the school community members on ways of enhancing disaster preparedness in schools?

1.6 Significance of the Study

This study is significant in the sense that its findings will raise awareness to the school management on the need for disaster preparedness. The study may serve as a benchmark for quality Assurance and standard officers and supervisors at all levels to advise schools on mitigation and preparedness measures.

The study may also offer the Ministry of Education information needed to strengthen the present policies in order to improve on disaster preparedness in schools. The study findings may create awareness to the stakeholders on issues related to disaster preparedness and security in schools. The study may also provoke more research by future researchers in related areas such as disaster preparedness and health and safety in schools.

1.7 Limitations and Delimitations of the Study

1.7.1 Limitations of the Study

Due to time limitation, it was not possible to get responses from parents and the community which would have made the study more comprehensive. Another limitation of the study was that there is a dearth of literature on disaster preparedness in schools. The review was basically drawn within and outside Kenya. The study was also limited by the fact that most schools do not keep records on disasters that occur in the schools. In cases where the head teacher has not served for long in a school, he/she may not be in a position to give adequate information on disasters that occurred in the past.
1.7.2 Delimitation of the Study

The study confined itself to some selected public secondary schools in Githunguri District, and therefore the results can only be generalized with caution. The study limited itself to principals and teachers in public secondary schools in Githunguri district. The study found out whether schools have adequate resources for disaster preparedness and how they are utilizing those resources to protect themselves.

1.8 Assumptions of the Study

The study was based on the assumption that the participants were cooperative, honest and they provided reliable answers. Secondly, the disaster preparedness in schools had not been adequately addressed.

1.9 Theoretical Framework

According to Singleton, Straits, Straits, and Mc Allister, (1998) any empirical study should be grounded on theory. This is because; a theory provides secure grounds on which we can come up with questions to be answered. Abraham (1992) concur that a theory is a systematic summary of interrelationships between variables in a conceptual framework. It thus explains observed events and relationships and predicts the occurrence of as yet unobserved ones on the basis of principles embodied in the theory. In this way, a theory enhances the meaningfulness of research, and thereby driving it towards validity.

In this study, the system theory was used. The central argument is that actors interact in statuses and develop agreements to sustain patterns of interaction that according to Turner (1991) became institutionalized. Institutionalization leads to relatively stable patterns of interaction among factors in status. This theory borrows directly from biology by conceiving the society as a biological organism with distinct organs, each
with specific functions to play for the meaningful specific function of the whole organism.

Senge, Kleiner, Roberts, Ross, Roth, and Smith, (1994) observes that a system is a perceived whole whose elements hang together because they continually affect each other over time and operate towards a common purpose. They further assert that system thinking encompass a larger and amorphous body of methods, tools and principles, all oriented to working at the interrelatedness of forces working as a common purpose (Ibid). The essence is the interdependence of the various parts of the system. The theory is based on the view that society is a system with interconnected institutions, which have specific functions for ensuring stability and harmony within the system.

Turner (1991) notes that a social system and its constituent parts can only be understood by assessing how each part contributes to the systematic whole. This calls for team learning to help keep individual members focused on their collective potential, building alignments to enhance the teams, capacity to think and act in a new synergy.

Team learning also draws upon the skills of building shared aspirations through improved conversation, dialogue and skilful discussion Senge, at al, (1994). In an organization like the school, each and every department is vital in the attainment of the overall school safety, particularly in combating disasters. It is, therefore important, to have all the concerned parties in the school in “perfect” working relationship and high alert for them to contribute appropriately in the whole organization.

The various parties for example teachers, non- teaching staff, students and parents will have to work together by pooling resources, which may include joint training and safety committees as they all continually affected each other and operate towards a
common purpose. The theory presupposes that the organization may fail to achieve the desired goals because of difficulties in interaction and coordination. For example, in a situation of panic, coordination of the rescue operation will be made difficult and as such the working condition is disrupted. (Librera, Bryant and Martz, 2004). Disasters are known to disrupt almost all the equilibrium, implying that the human being have to devise measures of controlling excessive distortion or surviving the disaster effects (UNDP, 2007). There is therefore the need to have all appropriate disaster prevention and recovery strategy in schools. This study was based on this theory to investigate the collective responsiveness of all concerned schools stakeholders with respect to disaster preparedness.
1.10 Conceptual Framework

The figure illustrates the independent and dependent variables of the study. The schools’ disaster preparedness ensures a safe, comfortable school environment.

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>DEPENDENT VARIABLES</th>
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<tr>
<td>DISASTER PREPAREDNESS</td>
<td>Preparedness policies</td>
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<td></td>
<td>- MoE Safety &amp; Standards guidelines</td>
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<td></td>
<td>- Schools’ disaster preparedness policies</td>
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<tr>
<td>IN SECONDARY SCHOOLS</td>
<td>Disaster Awareness</td>
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<tr>
<td></td>
<td>- Type of disasters</td>
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<td></td>
<td>- Disaster preparedness level</td>
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<td>- Reactions to disasters</td>
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<td>- Impact of disasters</td>
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<td></td>
<td>Preparedness facilities and equipments</td>
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<tr>
<td></td>
<td>- Lightning arresters</td>
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<td>- Fire extinguishers</td>
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<td>- Smoke detectors</td>
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<td>- Alarm systems</td>
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<td>Measures put in place</td>
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<td>- Emergency funds</td>
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<td></td>
<td>- Training in disaster management</td>
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Figure 1.1 Factors Influencing Disaster Preparedness in Githunguri District

Source: Researcher’s

The study investigated the position of the second box variables which represents disaster preparedness in schools.
### 1.11 Definition of Central Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>Disaster</strong></td>
<td>Refers to serious disruption of the functioning of the society causing widespread human, material or environmental damage and losses which exceed the ability to cope using their own resources.</td>
</tr>
<tr>
<td><strong>Disaster Management</strong></td>
<td>Refers to the organized analysis, planning, discussion, allocation of resources, roles and responsibilities to prepare prevent, mitigate, respond and recover from disruption by disasters.</td>
</tr>
<tr>
<td><strong>Fire</strong></td>
<td>Refers to an inferno especially in school which causes destruction of property and at times loss of life.</td>
</tr>
<tr>
<td><strong>Hazard</strong></td>
<td>Refers to potential damaging event that may be caused by technological processes resulting to loss of life, injury and damage of property.</td>
</tr>
<tr>
<td><strong>Mitigation</strong></td>
<td>Are measures undertaken to limit adverse affects that may result from a hazard</td>
</tr>
<tr>
<td><strong>Preparedness</strong></td>
<td>Refers to measures taken by a school aimed at dealing with situations that may occur prior to, during and after the tragedy.</td>
</tr>
<tr>
<td><strong>Preventive measures</strong></td>
<td>Refers to activities used to fight disasters in order to minimize destruction and ensure there is no loss of life and property.</td>
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<tr>
<td><strong>Relief/Response</strong></td>
<td>This is assistance and / or intervention during or immediately after a disaster.</td>
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<tr>
<td><strong>Resilience</strong></td>
<td>Refers to schools ability to operate again after a disaster</td>
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CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter consists of review of related literature used to conceptualize the research theme. This literature provides useful information on disaster preparedness in schools. The literature related to this study is reviewed under the following subheadings:

a) Types of disasters, their causes and effects.
b) Schools and disaster vulnerability
c) Disaster preparedness in schools in other parts of the world.
d) Disaster preparedness in Kenyan Secondary schools.
   (i) Policies
   (ii) Disaster Plans
   (iii) Disaster facilities and equipments
   (iv) Training and capacity development

2.2 Types of Disasters, Causes and Effects

Each year, schools all over the world suffer disasters ranging from small to large more damaging disasters that seriously affect the operation of the school. The school management spends millions of shillings in repairing or replacing schools after disasters. Further, students are left anxious, uprooted, out of classrooms for long periods of time or relocated to other facilities disrupting their education and increasing their stress. There is no single school that is not vulnerable to disasters (FEMA, 2009). In order to mitigate any disaster, the causes of the problem must be brought to the fore. To this effect, school disasters have a multiplicity of causes and by extension effects.
Disasters in schools could be caused by student violence, which include slapping, beating, bullying, rape and weapon use. The causes of school shootings (violence) are complex and varied. School killers feel powerless and begin to be obsessed with killing or injuring others. Use of guns gives them the power they felt deprived of and makes those offending them powerless. Indeed the first recorded school shooting was on May 4, 1956 when a 15 year old student called Billy Prevatte opened fire on teachers at the Maryland Park Junior High School in Prince George’s County. He wanted revenge for having been reprimanded by the school authorities (Bose, 2009).

The leading causes for school violence could be: behavioral problems/poor adjustment, family environment, lack of parental guidance, community environment, school environment, media, and easy accessibility to firearms (Bose 2009). According to the United States Secret Service, bullying and teasing were the leading causes of school shootings. Being bullied or teased by others can often lead a troubled youth to violent revenge or retribution.

According to the U.S. National Highway Traffic Safety Administration, school bus accidents result from a variety of causes, including driver negligence, defective equipment, dangerous roadways, poor weather conditions and improper maintenance. Srednicki (2002) noted that an average of forty-one (41) school-age children are killed in school bus-related traffic accidents each year in the U.S. Numerous injuries have occurred when riding, boarding or unloading from a school bus.

Nderitu (2009), in her study on implementation of safety standards Guidelines in Secondary schools, reported that school fire disasters are caused by students as an expression of dissatisfaction with the school administration, poor fire fighting equipments, poor-school-community relations, insecurity, failure to observe safety
regulations, failure to follow construction guidelines, poor school administration, powerful prefects, as well as media influence. Indiscipline was singled out as the main cause of school fire disasters in Kenya. For example, the March 26th 2001 fire tragedy at Kyanguli High School where 68 students lost their lives, has been the most remembered of all (Red Cross, 2001).

A flood is an overflow of an expanse of water that submerges land, a deluge. The most important cause of flooding is widespread, heavy rain, particularly when it continues for days. There are many other factors that can contribute to major flooding. They are; saturated or frozen ground, full streams, full dams, snowcover, and ice jams (ISDR, 2002).

According to ISDR (2002) Landslides are described as the downward movement of earth and rocks resulting from naturally occurring vibrations, changes in water content, removal of weathering as well as human manipulation of water courses and the composition of the slope. Landslides are triggered by rapid saturation of the soil, which in turn reduces cohesion, surface tension and friction. The El Nino rains experienced between October 1997 to February 1998 exacerbated the landslide hazards in Kenya (Wendo, 2002). Seismic activity, volcanic activity, geological, human and morphological causes have led to landslides.

Lightning is a giant spark. A single stroke of lighting can heat the air around it, causing the air to expand at an explosive rate. The expansion creates a shock wave that turns into a booming sound wave, known as thunder (Roeder, 2003) Thunder and Lighting occur at roughly the same time, although the flash of lighting appears much faster than sound. According to Spencer (2010), Lighting is produced in thunderstorms when liquid and ice particles above the freezing level collide, and build
up large electrical fields in the clouds. Once these electric fields become large enough, a giant “spark” occurs between them, reducing the charge separation. Objects that are struck by lighting can catch fire, or show little or not evidence of burning at all.

An earthquake is a sudden tremor or movement of the earth’s crust, which originates naturally at or below the earth’s surface (FEMA, 2010). Earthquakes are caused by volcanic eruptions and tectonic activity associated with plate margins and faults. The excessive exploitation of earth’s resources like building dams and blasting rocks leads to light tremors (Ganguly, 2010). In Japan in March 2011, a powerful earthquake led to a deadly tsunami, which led to deaths of thousands of people and destruction of property.

School disasters usually have profound effects on the school community members. School shootings, bus accidents, school fire disasters, flying roofs, collapsing buildings, bombs, strong winds like Katrina, and lightning strikes are a nightmare for students, parents, entire communities and often the whole country. Robinson (2001), notes there are decades of potential life lost by murder and accident victim(s) short and long term loss of health and finances by those injured, emotional distress by friends and family of the victim(s) and the incarceration of the perpetrator. Those of the 1999 Thurston School shooting have lived with post traumatic stress disorders. Some have been diagnosed with depression, anxiety and live with perpetual fear of another shooting (Ibid).

Moreover, the destruction caused by floods, landslides, lighting and earthquakes with respect to lives and material destruction leaves the land hit by one, completely shattered (FEMA, 2010). For example, during the Northridge Earthquake, California
schools were damaged, after the Red River flooded in the spring of 1997, North Dakota and Minnesota schools were inundated by mud and made uninhabitable (FEMA, 2007).

Governments spend millions repairing or replacing schools after disasters. As gloomy as this picture is, there is much that can be done by school officials to plan for disaster, to mitigate the risk, to protect the safety of students and educators, and to ensure that schools recover quickly. This study will investigate how prepared public secondary schools in Githunguri district are to prevent disasters and cope in case they occur. In cases where schools have experienced disasters, the researcher will document the types and causes of such disasters, as well as mitigation measures taken by the schools.

2.3 Schools and Disaster Vulnerability

Our schools are highly vulnerable to both man-made (technological) as well as natural disasters. It should always be remembered that the school bus is mechanically fabricated, and bearing in mind that human knowledge is limited to a certain degree, it is clear that school bus accidents are inevitable even with advancement in technology. Driver negligence, defective buses and improper maintenance have led to school bus accidents. There is need to put safety measures in place so as to minimize the impact should a disaster occur.

Bose (2009) notes that schools admit a wide range of students often from markedly different backgrounds. They have differences in terms of tribes, races, religious background, economic status, family stability and personality which manifest themselves in form of tensions in schools. Some students on being ridiculed by others for their ineptness, tend to resort to acts of aggression as a means of retribution. Besides, the students are exposed to repeated violence through the media and there is
easy accessibility to firearms. A survey showed that during the 1990s, on any given
day, an estimated 250,000 firearms would be carried to schools in the United States
(Ibid). This has increased juvenile acts of violence in schools.

Many fires in schools are started deliberately. An alarming trend is that deliberately
set fires are generally set from inside the school increasing the risk to the occupants
and the property. In Kenya, the main cause of these incidences has been closely
related to strikes. As Nderitu (2009) notes, strikes occur in schools due to the high
handedness of the headteachers, drug abuse, communication barrier, media and
societal influence. Moreover, negligence in the laboratory and the kitchen, electric
and electronic overload, poor electrification have also led to fire disasters in schools
(Fire Fighter Forum, 2009). This suggests that schools are highly vulnerable to fire
disasters.

Floods are one of the most widespread and destructive natural disasters. Often floods
are sudden and are difficult to predict. An example of this is flash floods. Some floods
develop slowly during an extended period of rain (FEMA, 2004). In fact floods have
historically killed more people than any other form of natural disaster (Bradshaw,
Sodhi, Peh, and Brook, 2007).

In Pakistan, over 5,500 schools have been damaged across the country, while 5,000
others are being used as shelters for displaced families. 8.6 million children under 18
years are affected (Muzaffargarh, 2010).

Lightning is the most under recognized weather hazard. It is a leading cause of storm
deaths and also inflicts life-long severe injuries on many more (Cooper, 1995). Yet
because lighting usually claims only one or two victims at a time and does not cause
mass destruction of property, it is underrated as a risk. Lightning’s unpredictability
increases the risk to individuals and property. It often strikes outside of heavy rain and
may occur as far as 10 miles away from any rainfall. Roeder (2003), asserts that the largest number of lightning casualties occurs in open areas, including sports fields and playgrounds. This is, obviously, significant for schools, since they have many activities in open fields.

Landslides occur where they have before and in identifiable hazard locations. The materials may move by falling, toppling, sliding, spreading, or flowing (American Red Cross, 2010). Landslides can be activated by natural disasters or where human modification of the land has destroyed vegetation on slopes. These areas are vulnerable to landslides during and after heavy rains. Although landslides are primarily associated with mountainous regions, they can also occur in areas of generally low relief. In low relief areas, landslides occur in areas of roads and buildings excavations, open-pit mines, quarries and mine-waste piles. For example, in 1966, an avalanche of mud and rocks buried a school in Aberfan, Wales, killing 148 people, mostly young students. The school was located below a hill where a mining operation dumped its waste (Bennett, 2010).

Earthquakes are low-probability, high-consequence events. Though they may occur only once in the life of a school, they can have devastating, irreversible consequences. Moderate earthquakes can cause serious damage to building contents and non-structural building systems, serious injuries to students and staff, and disruption of building operations. Major earthquakes can cause catastrophic damage, including structural collapse and massive loss of life (NCEF, 2008).

Most earthquake-related deaths are caused by the collapse of structures or falling of heavy objects on the victims and the construction practices play a tremendous role in the death toll of an earthquake. Building practices can make all the difference during earthquakes (FEMA, 2010). Since an earthquake is an unexpected event which cannot
be predicted in advance, the only way to control the impact is with the help of earthquake safety precautions. This study will find out the level of disaster vulnerability among public secondary schools in Githunguri district. Of particular importance is the perception of school personnel about the levels of vulnerability in their schools.

2.4 Disaster Preparedness in Schools in other Parts of the World

Emergency preparedness plans have evolved over recent years to include not only intentional disasters but also unintentional public health emergencies such as natural disasters. In the United States of America, the state governments require specific disaster preparedness activities in their school systems. In California, for example, schools are required to: have a disaster plan, have periodic ‘drop cover hold’ practices in preparation for earthquakes, hold regular drills for staff and students, and hold educational and training programs for students and staff.

In Kentucky, a 1992 bill mandated disaster plans, drills and training in the schools. Disaster drills in schools are required in Oregon, Montana and Missouri, (FEMA, 2007). FEMA recommends the following actions for all school officials:
- Identify hazards likely to happen to your schools, mitigate against the hazards,
- develop a response plan, including an evacuation route, plan for coping after a disaster and implement drills.

In the United Kingdom, the Scotland School Estate, (2003) required the school principals to ensure that adequate systems are in place and that checks are carried out to minimize the disaster effects. Effective safety management in educational establishments includes the following: Creation of a school safety plan, Perform a needs assessment, Conduct a site survey, adequate training and information for all members of staff, conduct practice drills, regular checking and servicing of disaster
preparedness facilities and equipments by a trained person and evacuation procedures should include arrangements for people with disabilities.

Baltas (2004) gives the example of safety of school buildings in Greece where he states that the School Building Organization in Greece is responsible for the design, construction, planning and management of property and equipment of all schools. Safety of educational facilities and disaster management in educational institutions in Greece is the responsibility of the School Building Organization together with other public bodies such as the Ministry of National Education and Religious Affairs, the Secretariat of Civil Protection, the Earthquake Planning and Protection Organization, and local and prefectural authorities (Houndoumadi, Pateraki & Doanidou, 2003). School safety and security issues in Greece are classified according to how school communities perceive safety (Houndoumadi et al., 2003). Based on research including a questionnaire on school buildings, which was conducted in all schools in collaboration with the National Technical University in 1998 and in 2002, the following school safety framework was identified: Enforcing structural and accommodation regulations for wells, glass areas, fire protection, heat insulation and access for people with disabilities, using safe structural materials in buildings and equipment with the aim of protecting the environment (i.e. by controlling colouring of materials, chemical emissions and use of asbestos-based fibre materials, and by providing natural ventilation infrastructure), using ergonomic standards for the dimensions, shape, size and comfort of school furniture, ensuring hygiene in all schools, particularly in sanitary areas and in electrical and plumbing installations. Addressing issues of AIDS, drugs and alcohol in schools by developing health education and welfare and prevention policies, ensuring student’s safe arrival to and departure from school by providing secure school routes, special traffic signs and
pedestrian roads around school buildings and encouraging tolerance in multi-cultural school settings. Socialization can be an effective remedy for prejudice, alienation and anti-social behaviours. Schools are an ideal setting to promote the principles of democratic governance, tolerance and social responsibility (Ibid).

The measures mentioned above can be replicated in Kenyan schools so as to reduce the risks to students and staff. This study will seek to investigate disaster preparedness in public secondary schools in Githunguri district.

2.5 Disaster Preparedness in Kenyan Secondary Schools

Disasters are inevitable even with advancement in technology. All we can do is put measures in place to prevent or minimize the impact should a disaster occur. As Nderitu (2009) asserts, the degree of preparedness of a school’s entire system makes the difference should a disaster occur. Despite the integral nature of school in the life, health and protection of students, there has been remarkably little attention devoted to disaster preparedness in schools (Danielson, J. Chung, S. and Shannon, M., 2009). Therefore, it is important for educational administrators to reduce vulnerability or avoid destruction and human misery that follow in the wake of disasters. They can neutralize imminent disasters or minimize their effects through disaster preparedness. Preparedness is achieved and maintained through a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action, (FEMA, 2009). The following are activities schools can adopt in disaster preparedness.

2.5.1 Disaster preparedness plans

Disaster can strike any school in any location. During an actual emergency, quick and effective action is required. This action often depends on having made and
implemented effective preparedness plan, (IFRC, 2000). The effectiveness of a school disaster preparedness plan is measured in the precious lives of students, teachers and administrators that are left unharmed following an incident of school based violence, an accident, a natural disaster or other hazard, (Librera, Bryant and Martz, 2004).

There should be policies, plans and guidelines on disaster preparedness. These guidelines could include risk and vulnerability assessments, institutional framework and an effective information system (Ibid).

FEMA (2009) identified the following as being essential in disaster preparedness plans: Guide maps designating planned evacuation routes, assembly areas, utility shut-off valve, first aid stations and designated areas for prolonged staff and student care, arrangements must be made to provide for accountability of staff and students, orderly release of students to parents and guardians and temporary shelter, should it be needed, evacuation alarm information must be clearly communicated in the plan, allocate resources for emergency for the smooth running of the system, schools with staff or students with special needs must direct special attention to the disposition and needs of these staff and students, copies of each school disaster plan should be distributed to every staff member, one copy filed and another sent to local law enforcement and also on all notice boards and a state of high alert should be in place.

Schools, while preparing the disaster plans should determine which natural and technological disasters are possible in their areas. The following are safety procedures for various disasters that schools can adopt to minimize disaster effects:

On school bus safety, all school buses must be equipped with three-point lap and shoulder belts, staff and student must attend school bus safety training session, bus drivers should wear seat belts, bus drivers should be competent and free of alcohol-
related convictions, regularly service the schools bus and student discipline must be maintained (Downs, 2010).

The Safety Standards Manual for Schools in Kenya (2008) adds that: The bus must have a First Aid Kit, the bus must be fitted with speed governors to be driven at not more than 60KPh, no undesirable materials should be depicted inside or outside the bus, the speed limit within the school compound for any motorized vehicle should be 5Kph, school administrators should ensure that Ministry of Education guidelines on school travel for learners are strictly adhered to.

School fire safety: The Fire Fighter Forum (2009), in its manual on the basics of fire disaster management advocates that people should ensure:

Incompatible materials are not stored in close proximity to each other, doors, windows and corridors are not obstructed by stored materials, regularly remove all combustible rubbish, secure flammable liquids in approved containers, electrical wiring should be checked by an electrician regularly, secure entry points to premises, including windows and roofs, secure waste bins separately from buildings, install smoke alarms and heat detectors, install fire warning alarms, open corridors with designated fire exists properly marked at each end, always unplug electrical appliances, install intruder alarms and access control and the outside of premises should be well lit.

**Flood Safety**

According to the National Clearinghouse for Education Facilities (NCEF, 2008), reducing or eliminating damage is difficult in schools not built to withstand flooding, but a number of practical measures may be undertaken;
Improve site drainage by re-grading, adding or enlarging storm drains or culverts, and adding a storm water retention area, provide fail-safe backup power for sump pump to keep them functioning during electrical outages, add clean or repair check valves in sewer lines to prevent sewage from backing up into the school, provide off-site computer back-up storage for electronic school records, when replacing mechanical and electrical equipment, devise ways of elevating or otherwise flood-proofing it and if the school is multi-storey consider relocating the library to a higher floor.

**Safety during landslides**

The American Red Cross (2010), advocates for the following in preparation for a landslide:

Become familiar with the land around the school, develop an evacuation plan, during heavy rains, schools in landslide-prone areas should be on the look-out for signs of unusual land movement, on detection of unusual land movement, alternative learning facilities should be used until the threat ends, during intense storms, listen for any unusual sounds that might indicate moving debris, rapid evacuation measures should be implemented when a landslide takes place. Quickly move out of the path of the landslide or debris flow, after a landslide, stay away from the slide area. There may be danger of additional slides, check for injured and trapped persons near the slide. Direct rescuers to their locations, look for and report broken utility lines to appropriate authorities, check the building foundation and surrounding land for damage to assess the safety of the area.
**Thunderstorms and Lightning Safety**

The safety standards manual for schools in Kenya (2008) advices that:

During thunderstorms, learners should remain in the school and stay indoors, during thunderstorms, learners should be seated inside school buildings, and no one should take shelter in the verandahs or open places, learner should be warned that during thunderstorms, they should never take shelter under trees or walk in the rain, in areas prone to thunderstorm and lightning, school authorities should install lighting arresters.

Roeder (2003) adds:

Schools should schedule outdoor activities to avoid the lightning threat, While inside buildings, people should stay off corded phones, computers and other electrical equipment that put them in direct contact with electricity, install proper lightning protection system on the electronic equipment, lightning strike victims carry no electrical charge and should be given urgent medical attention and there is NO safe place outside in a thunderstorm. When Thunder Roars, Go Indoors!

**Earthquake Safety**

Earthquake injuries and damage can be reduced or avoided entirely if appropriate measures are taken. NCEF (2008) recommends:

Consult with a qualified engineering firm to determine if the school meets current structural safety standards, prepare and regularly update earthquake plans, determine and post primary and alternate routes for emergency evacuation of the school, hold periodic drills and exercises, conduct “hazard hunts” to find non-structural hazards in offices, classrooms, storerooms, laboratories, and other areas. Secure and anchor objects, furnishings and equipment.
FEMA (2010) adds that if indoors, students should;

Drop to the ground, take cover by getting under a table or other piece of furniture, and Hold on until the shaking stops. They should not panic or attempt to rush outside, stay away from windows, glass, doors and walls and anything that could fall.

If outdoors, stay there but move away from buildings, trees and utility wires until the shaking stops. If in a moving vehicle, Stop as quickly as safety permits and stay in the vehicle. Proceed cautiously once the earthquake has stopped.

These safety precautions can be adopted by secondary schools in Kenya to fully prepare for disasters. Librera, Bryant and Martz, (2004) notes that being especially alert where there is a possible threat is essential for all school staff. It is particularly important for staff to respond at the earliest possible stage of identification. Whether the threat is internal or external, prescribed actions should be initiated based on the level of threat.

The plan must be comprehensive. Clear, simple and flexible for use in an emergency and under stress, (Patkus and Walpole, 2007). A disaster plan must be considered a living document. Passage of time will make the disaster plans impractical, invalid and outdated (Ibid). They should be periodically reviewed, frequently tested, property understood and priorities revised as needed.

An inventory of all items that require attention will be essential for salvage (FEMA, 2007). The study will establish whether secondary schools in Githunguri are equipped with the necessary resources and skills to ensure flood safety, safety in case of landslides, thunderstorms and lightning, and earthquakes.

2.5.2 Personnel Training and Capacity Development

No matter how much effort has been put into creating the perfect disaster plan, it will largely be ineffective if the staff and students are not aware of it, or if it cannot be
found during a disaster, (Patkus and Walpole, 2007). Nderitu (2009), while investigating the implementation of safety standards Guidelines in Secondary schools, found out that headteachers were not trained on disaster management nor was the school community. Therefore, a concerted effort must be made to educate and train staff and students in emergency procedures, otherwise in the event of a disaster, a period of panic and uncertainty may crop up before any action can be taken. Panic, may also grip inexperienced, untrained rescuers as well as ill-equipped personnel. Each staff member should be made aware of his or her responsibilities, and the lines of authority should be known and written at strategic places.

Schools should have an emergency team organized in accordance with incident command system principles and be prepared to engage in unified command processes (Borland, 2008). For example, clearly identify the person who can sound a fire alarm, order an evacuation, or contact outside assistance. At night the security personnel should be provided with telephone extensions or mobile phones to enable them contact emergency services. Search and rescue teams should be well trained to handle disasters.

School staff should be empowered to implement any of the emergency procedures, for example, calling the fire brigade or police. They should be able to give the name of the premises, road or street (Ibid). Disaster preparedness awareness can be incorporated into subjects like Geography, Science, Art and reading and other subject at the school and training institutions level, (FEMA, 2007). The schools should invite qualified personnel in various fields to give talks and demonstrations to staff and students on disaster preparedness in a school context (MOE, 2008).
For effective response to be achieved, a structure for decision making and coordination of the action plan and the actual response must be put in place, (Davis and Wall, 1999).

Good communication enables command and control of an emergency situation.

Training of students and staff should be focused on the four recognized phases of emergency management for schools; namely prevention/mitigation, preparedness, response and recovery, (Borland, 2008).

As Nderitu (2009) recommended, the Government should strive to assist the school authorities to adequately prepare for school disasters by introducing disaster management training in all teacher training institutions and in-service courses for others.

Practice drills and exercises should be conducted frequently (at least twice a term). Kelly (2010) recommended that practice drills should be taken seriously because through practice, the students and teachers will learn what to do and how to behave in an emergency. The escape route should be known and the assembly point identified. Everyone is expected to remain calm and accountability of staff and students done. Practice drills reduce time wastage during an actual evacuation.

Mutunga in Mwangi (2008) noted that rehearsal drills in disaster preparedness must be done. The rehearsal re-emphasis points made in separate training programs and test the systems as a whole and invariably reveal several gaps that otherwise might have been overlooked. Rehearsal optimizes the effectiveness and efficiency of response. The more frequent the rehearsals, the more internalized the process and by extension the better the performance (Ibid).
Crowd control should become a major component of security personnel training. First aid skills enable members of the school community to handle the effects of disasters. The students, teachers and non-teaching staff should have first aid training so as to assist during emergencies (Mwangi, 2008). The MoE (2001) through a circular on Health and Safety Standards G9/1/169 requires matrons and nurses to have first aid education in disaster and crisis management. They should be trained on how to handle emergencies including fires and accidents.

In this study, the researcher found out whether school’s personnel, among them teachers and the non-teaching staff, have attended any training courses on disaster preparedness, and whether such training has equipped them with skills to prevent or cope with disasters.

2.5.3 Disaster Facilities and Equipments

Within the school, disaster protection systems are of primary concern. Nderitu (2009) in her study reported that most schools did not have adequate fire fighting equipments nor reliable alarm systems. Safety equipments in schools and other public places should be mandatory in preparation for disasters. These equipments include fire extinguishers, fire blanket, alarms, sand, water points and hoses.

Smoke detectors can also be used to sense and warn people in cases of fires thus increasing chances of survival. These facilities and equipments must be properly marked and appropriate signs placed in conspicuous points of a building (F.F.F, 2009). They should be in good working order, achieved through quarterly inspection.

An emergency kit is essential which should contain first aid supplies, flash lights, batteries, whistles, radios and the blueprints of school buildings. It should be maintained in several accessible and secure locations. The kit should be checked regularly to ensure that its components are there.
According to Mutunga in Mwangi (2008), resources for disasters, once they are ready play a critical role in ensuring timely and efficient delivery of disaster response efforts. The Kenya government in its efforts to assist schools prepare for disasters, disbursed funds to all provincial boarding secondary schools to purchase fire-fighting equipments. During the launch of the Ministry of Education Safety Standards Manual For Schools on 19th August, 2008, the then Education Minister Professor Sam Ongeri said that each school had been allocated between Kshs. 150,000 to Kshs. 350,000.

The schools in Kenya should equip all rooms with heat detectors that are activated by sudden rise in room temperature and be wired back to control panel since fire disasters are more prevalent in secondary schools (Ibid). If the disaster facilities and equipments are stored in a lockable room, the keys should be made available in an emergency. The school administrators can request the local building regulatory agency, fire department and Geologists to inspect their school for safety and prevention.

2.6 Summary

In Kenya today and the world all over, disasters have proved to be a major challenge. Most of the disaster response initiatives in Kenya have been adhoc, uncoordinated and short-term measures. However, it is important to prepare for disasters in schools through the four phases of Emergency Management that is prevention/mitigation, preparedness, response and recovery. These measures should be effectively implemented to minimize if not eradicate imminent disasters.

Only a few studies (Ngecu & Mathu, 1999; Mwangi, 2008; and Nderitu, 2009) were identified looking at issues related to disaster preparedness in Kenyan schools. The first one by Mwangi (2008) surveyed the status of disaster preparedness in public secondary schools in Kiharu division of Murang’a district. This study by Mwangi did
not find out the attitudes of workers towards disaster preparedness, which is one of the objectives of the current study. Ngecu & Mathu (1999) conducted a study on the El-Niño-triggered landslides and their socioeconomic impact on Kenya. However, their study did not look into the impacts on education, and was limited to one cause of disaster only – landslides. In Githunguri, the most closely related study was conducted by Nderitu (2009) to determine the implementation of safety standards guidelines in secondary schools in Githunguri division of Kiambu district. However, this study by Nderitu did not look into disaster preparedness as a whole. It was therefore, the purpose of this study to investigate the level of disaster preparedness in public secondary schools in Githunguri District.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
The study sought to investigate school disaster preparedness in public secondary schools. This chapter describes the research design, location of the study, target population, sampling procedures, research instruments and piloting. It also dealt with data collection procedures and methods of data analysis.

3.2 Research Design
This study was conducted through descriptive research design. Orodho (2009) observes that the descriptive research studies are conducted to determine the status quo and with the gathering of facts and figures rather than the manipulation of variables. The descriptive research design is the most frequently used method for collecting information about people’s attitudes, opinions, habits, or any of the variety of educational issues. Weirsman (1985) noted that the descriptive research design is concerned with gathering of facts or obtaining pertinent and praise information concerning the current status of phenomenon and whenever possible draw possible conclusions from the facts discovered. Descriptive design was appropriate as it enabled the researcher to gather information concerning disaster preparedness without manipulation of variables.

3.3 Location of the Study
The study was undertaken in Githunguri District. The locale was chosen because several schools in the district have suffered disasters, especially fire-related disasters in the recent past.
3.4 Target Population

For this study, the target population was drawn from the public secondary schools in Githunguri District. The study population comprised of 28 secondary schools in Githunguri District. It was narrowed down to 12 principals and 60 teachers making a total of 72 respondents.

3.5 Sample and Sampling Procedure

Out of the twenty-eight (28) public secondary schools twelve (12) were sampled. The study sampled 12 principals and 5 teachers only from the 12 sampled schools. The total respondents were 72. Gay (1992) suggests that for descriptive studies, a sample of 10 percent of the accessible population is enough. This sample accounted for 43 percent of the total population which is representative of the target population. The researcher derived the sample from each of the sub-group of boys’ boarding, girls’ boarding, mixed day and boarding and mixed day schools. From each sub-group simple random sampling was used to select 43 percent of the schools, giving a total of 12 schools for the study. Table 3.1 shows the sampling matrix.

Table 3.1: Sampling matrix for the study

<table>
<thead>
<tr>
<th>School category</th>
<th>Number of schools</th>
<th>Sample size (43%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys boarding</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Girls boarding</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mixed day and boarding</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Mixed day</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

*Source: District Education Office, Githunguri (2010)*
3.6 Research Instruments

The type of instruments that were used in the study were; questionnaires for the principals and teachers. The researcher was able to collect information using questionnaires as they are appropriate in descriptive survey where the number of respondents is high (Orodho, 2008). It has also been noted by Gay (1992), that descriptive data is typically collected through questionnaires. The questionnaires were designed to obtain information because they are easy and cost effective and time saving while administering to a large population (Walker, 1985). Secondly, anonymity of the respondents filling them may help them to be honest in their answers. Thirdly, questionnaires enable the person administering them to explain the purpose of the study and to give meaning of items that may not be clear (Best and Khan, 2001).

The questionnaires, comprising of both structured and open-ended questions were constructed to respond to research objectives concerning the disaster preparedness policies, disaster awareness, facilities and equipments, measures put in place to enhance disaster preparedness and suggestions on how to enhance disaster preparedness in schools. The questionnaire had two sections; part one collected the personal / school details while part two was on disaster preparedness. The questionnaire contained both structured and unstructured questions. A rating scale to measure the opinion of the respondents on the disaster preparedness levels was used. The scales used were Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) and Don’t Know (DK). The most positive got five words and most negative one point. Likert scale rating was considered appropriate in measuring opinions because it gives a range of rating points describing different opinions. It is easy to analyze and compare responses given to different items (Orodho, 2009).
3.7 Piloting of Research Instruments

Before data collection piloting of the research instruments was done in three schools in Githunguri District, which were not included in the study sample. According to Orodho (2009), the questionnaire should be piloted with a small representative sample identical to, but not including the group you are going to survey. The aim of pre-testing was to enhance the validity and reliability of the research instruments. Piloting of the research instruments helps in revealing vagueness in questions as well as deficiencies in the questionnaire (Mugenda and Mugenda, 1999).

3.7.1 Validity of Instruments

Orodho (2009) defines validity as the accuracy and meaningfulness of inference, which are based on the research results. In other words, it is the degree to which results obtained from the analysis of the data actually represent the phenomenon under investigation. The researcher discussed with her supervisors and colleagues who were requested to advice on whether the instruments accurately represented the concept under study. After the discussion the researcher incorporated the recommendations in the final questionnaires.

3.7.2 Reliability of Research Instruments

Mugenda and Mugenda (1999) attest that reliability is a measure of degree to which a research instrument yields consistent results or data after repeated trials. The researcher used the test-retest method which involves administering the same instrument twice to the same group of subjects. There was a time lapse between the first test and the second test.

Pearson Product Moment formula for the test-retest was employed to compute the correlation coefficient. It gave a correlation coefficient of 0.815. Orodho (2008) notes
that a correlation coefficient of about 0.8 should be considered high enough to judge the instrument as reliable for the study.

3.8 Data Collection Procedure

The researcher obtained a letter of introduction from the school of Education, Kenyatta University and then presented it to the Ministry of Education headquarters for permit issuance. The researcher then obtained a letter of introduction from the office of the District Education Officer, Githunguri to the schools where the research was conducted. A visit to the sampled schools was made in order to introduce, familiarize and inform the principals who assisted in scheduling time to collect data. The questionnaires were personally administered to the principals and teachers by the researcher. In some schools, the respondents answered the questions promptly while in others the questionnaires were collected by the researcher.

3.9 Data Analysis

The data was collected through the use of questionnaires was coded, cleaned and analyzed using descriptive statistics. After data cleaning, the data was coded and entered in the computer for analysis. Data analysis procedures employed involved both quantitative and qualitative procedures. Quantitative data were analysed using descriptive statistics such as frequency counts, means and percentages. Gay (1992) notes that, the commonly used method in reporting a descriptive survey is the use of frequency distributions and percentages by tabulating them on graphs. Quantitative data analysis required the use of a computer spreadsheet, and for this reason the Statistical Package for Social Sciences (SPSS) was used. Martin and Acuna (2002) states that SPSS is able to handle large amount of data, and given its wide spectrum of statistical procedures purposefully designed for social sciences, it is also quite efficient. Qualitative data was analyzed qualitatively using content analysis based on
analysis of meanings and implications emanating from respondent information and comparing responses to documented data on disaster preparedness in schools. The qualitative data was presented thematically in line with the objectives of the study. The results of data analysis were presented using frequency distribution tables, bar graphs and pie charts.
CHAPTER FOUR
FINDINGS AND DISCUSSION

4.1 Introduction
In this chapter data are presented and analyzed. The main purpose of the study was to investigate disaster preparedness and management among teachers and principals in public secondary schools in Githunguri district. The information was collected through the administration of the questionnaires to 12 headteachers and 60 teachers. The results of the study are organized into sub-topics focusing on the specific objectives namely; disaster preparedness policies in place in public secondary schools, level of disaster awareness among the school community members, disaster preparedness facilities and equipment installed in schools, measures put in place to enhance disaster preparedness in schools and respondents’ suggestions on how to enhance disaster preparedness in secondary schools.

4.2: Demographic information
The study was conducted in 12 secondary schools selected from 28 schools in Githunguri District using stratified random sampling method. The respondents of the study comprised of 60 teachers and 12 principals. All participants cooperated during the study by responding to all questionnaires leading to a return rate of 100%.
4.2.1: Gender

Regarding gender the number of female versus male respondents was almost equal as shown in Table 4.1

Table 4.1: Gender of the Respondents

<table>
<thead>
<tr>
<th>Category</th>
<th>Headteachers</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Females</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Males</td>
<td>6</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>

There were 12 headteachers who responded to the questionnaires out of whom 50 percent were females and 50 percent males. Among the teachers 52 percent were females and 48 percent were males. This gave a fair gender representation in the study.

4.2.2: Headteachers/Teachers Working Experience

The headteachers and teachers had varied working experience as illustrated in Table 4.2.

Table 4.2: Teachers and Head Teachers Working Experience

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th>Teachers</th>
<th></th>
<th>Head Teachers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>1-5 years</td>
<td>11</td>
<td>18.3</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>6-10 years</td>
<td>13</td>
<td>21.7</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>11-15 years</td>
<td>10</td>
<td>16.7</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>16-20 years</td>
<td>15</td>
<td>25.0</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>21 years and above</td>
<td>11</td>
<td>18.3</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.0</td>
<td>12</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 4.2 revealed that majority 50 percent of the headteachers had a headship experience of 5 years and below while the rest 50 percent had a headship experience of over 6 years. On the other hand majority 56.7 percent of the teachers had a teaching experience of 15 years and below. This revealed that the experience of the teaching staff in the schools may be adequate for them to give reliable information on the history of disasters in schools.

4.2.3: Duration Served as Headteachers and Teachers in Current Schools

The headteachers and teachers indicated the following as the duration served in their current schools.

Table 4.3 Respondents Headship/Teaching experiences in their Current Schools

<table>
<thead>
<tr>
<th>Duration</th>
<th>Teachers</th>
<th>Head Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>1-5 years</td>
<td>34</td>
<td>56.7</td>
</tr>
<tr>
<td>6-10 years</td>
<td>13</td>
<td>21.7</td>
</tr>
<tr>
<td>11-15 years</td>
<td>7</td>
<td>11.7</td>
</tr>
<tr>
<td>16-20 years</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Majority (78.4 percent) teachers had worked in their schools for between 1 – 10 years while all 100 percent headteachers were in their current schools for 5 years and below. This is an indication that the experience of teachers may be adequate for respondents to provide information on disaster preparedness and management in their schools.

4.2.4: Type of Schools

With regard to the type of schools, out of the 12 sampled secondary schools, 25 percent were boys, 16.7 percent were girls while 58.3 percent were mixed schools.
Figure 4.1: Type of Schools

Figure 4.1 illustrates that out of the 60 sampled teachers 31.7 percent were in boys’ schools, 21.7 percent were in girls’ schools while 46.7 percent were in mixed schools. More boys and mixed schools 83.3 percent than girls’ schools were sampled. The reasons being that, such schools were prone to school unrests which led to disasters in their schools. The data was therefore representative of all category of schools.

4.2.5: Status of Schools

Regarding the school status, there were more day schools as indicated in Table 4.4.

Table 4.4: Status of Schools

<table>
<thead>
<tr>
<th>Status</th>
<th>Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
</tr>
<tr>
<td>Boarding</td>
<td>5</td>
</tr>
<tr>
<td>Day</td>
<td>6</td>
</tr>
<tr>
<td>Mixed day and boarding</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

It can be observed from the table that most (50 percent) of the schools were day secondary schools while 41.7 percent of the principals indicated their schools were
boarding. Boarding schools were more involved in school strikes therefore there was a need to know the status of schools.

4.2.6: Enrolment Levels

The headteachers indicated the following as the schools’ enrolment levels.

Table 4.5: Enrolment Levels

<table>
<thead>
<tr>
<th>Enrolment levels</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-400</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>401-600</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>601-800</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Above 801</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 4.5 reveals that 5 schools had 200-400 students, 2 reported they had 401-600 students, 3 indicated they had 601-800 while 2 reported that they had above 801 students. It was observed that schools with high enrolment levels tend to have more casualties in the event of a disaster due to the ensuing panic and confusion. This calls for disaster preparedness in relation to the size of the population.

The principals were further asked whether they had storey buildings in their schools.

4.2.7: Schools which had Storey Buildings

Most (58.3 percent) of the schools had storey buildings while 41.7 percent reported that their schools did not have storey buildings. Storey buildings cause a major threat to the school’s population when a disaster occurs thus the need to establish whether they existed. Movement through stairs in a storey building does not allow for an easy escape during disasters.
4.3 Disaster Preparedness Policies in Public Secondary Schools

In 2001 the MoE issued Health and Safety Standards Secular, G9/1/169 to all educational institutions requiring them to implement the guidelines and specifications as per the circular. Owing to this, the researcher sought to find out the disaster preparedness policies in place in public secondary schools.

4.3.1 Preparedness Policies in Schools

The respondents were asked whether their schools had a disaster management/preparedness policy. They replied as shown in Figure 4.2.

![Figure 4.2: Schools with Disaster Preparedness Policy](image)

Figure 4.2 reveals that there was no consensus of responses because majority (66.7 percent) headteachers indicated that their schools had a disaster preparedness policy received from MoE on Health and Safety Standards (2001) while minority (35 percent) teachers in the same schools concurred with them. However, majority of the teachers (65 percent) differed with headteachers on this item. There seems to be a contradiction between teachers’ and principals’ responses. According to the
researcher there could be disaster emergency policies in schools from the MoE but the teachers may not know that they existed because they may not have been made aware of them. However, all members of the school community should be made aware of these policies.

The respondents were further asked to list the core highlights of the disaster management/preparedness policy in their schools. They responded as shown in table 4.6 below:

**Table 4.6: Core Highlights of the Disaster Preparedness Policy in Schools**

<table>
<thead>
<tr>
<th>Highlights</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring fire prone areas are equipped with fire extinguishers</td>
<td>62</td>
<td>86%</td>
</tr>
<tr>
<td>Ensuring security man is from a recognized security firm</td>
<td>38</td>
<td>53%</td>
</tr>
<tr>
<td>Ensuring doors open outwards and there are adequate emergency doors</td>
<td>45</td>
<td>63%</td>
</tr>
<tr>
<td>Procedures to take incase of an emergency</td>
<td>41</td>
<td>57%</td>
</tr>
<tr>
<td>Use of escape routes from buildings</td>
<td>27</td>
<td>38%</td>
</tr>
<tr>
<td>Methods of alertness incase of an emergency</td>
<td>15</td>
<td>21%</td>
</tr>
<tr>
<td>Indication of meeting/assembly points incase of disaster occurrence</td>
<td>51</td>
<td>70%</td>
</tr>
</tbody>
</table>

Majority (86 percent) respondents cited equipping of fire prone areas with fire extinguishers as a major highlight in disaster preparedness policy in their schools. Indication of meeting points incase of disaster occurrence was mentioned as indicated by (70 percent) respondents. Another group of (63 percent) respondents highlighted ensuring doors open outwards and there are adequate emergency doors. However, use of escape routes from buildings and methods of alertness incase of emergency were not given prominence in the highlights. It can be reduced from this response that
schools are aware of disaster preparedness policy although these highlights are not sufficient as policy.

The respondents were further asked whether their schools had a disaster emergency plan, half (50 percent) of the principals indicated that their schools had disaster emergency plan while the other half (50 percent) indicated that their schools did not have emergency plans. On the other hand, 35 percent of the teachers indicated that their schools had emergency plans while 65 percent indicated their schools did not have the plans. This implies that if disasters were to occur, there would be a lot of damage to property and loss of life. This can be attributed to lack of commitment towards disaster preparedness in the schools.

4.3.2 Respondents’ Opinion on the Contents found in the Emergency Plan

Fire Emergency Management Agency (2009) identified the following as being essential in disaster preparedness plans: Guide maps designating planned evacuation routes, assembly areas, utility shut-off valve, first aid stations and designated areas for prolonged staff and student care, arrangements must be made to provide for accountability of staff and students, orderly release of students to parents and guardians and temporary shelter, should it be needed, evacuation alarm information must be clearly communicated in the plan, allocate resources for emergency for the smooth running of the system, schools with staff or students with special needs must direct special attention to the disposition and needs of these staff and students, copies of each school disaster plan should be distributed to every staff member, one copy filed and another sent to local law enforcement and also on all notice boards and a state of high alert should be in place.

Owing to this, the researcher sought to find out what has been put in place in schools.
Table 4.7: Contents Found in the Disaster Emergency Plan

<table>
<thead>
<tr>
<th>Adequacy of Disaster Emergency Plan</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Disaster committee/crisis team</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Instructions in case of a disaster</td>
<td>4</td>
<td>33.3</td>
</tr>
<tr>
<td>Warning alarms</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>Emergency exits</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>Evacuation routes</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Re-Union ground for all school personnel</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>Alternative learning area</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Telephone and who to contact</td>
<td>5</td>
<td>41.7</td>
</tr>
</tbody>
</table>

Table 4.7 highlights that majority (58.3 percent) headteachers indicated that their schools had warning alarms and re-union ground for all school personnel. However, majority (91.7 percent) schools did not have any alternative learning area nor emergency exits in the event of a disaster. Disaster committee/crisis teams and evacuation routes were also missing in many schools as indicated by 83.3 percent respondents. Instructions in case of a disaster though very important was lacking in many schools as shown 66.7 percent respondents. This confirmed that indeed schools are not prepared for disasters. However, all the schools should have emergency plans for disasters occur indiscriminately.

4.4 Level of Disaster Awareness among the School Community Members

The study sought to find out the level of disaster awareness among school community members. To establish this, the respondents were asked some questions, whose answers are discussed below.

The respondents were asked whether their schools had experienced any disasters. Majority (58.3 percent) of the schools indicated that they had experienced disasters while 41.7 percent had not experienced any disasters. This is probably because they
had short teaching experience in their schools, thus lacked historical information. The level of awareness is important because the school community members are able to prepare for the disasters they become proactive rather than reactive.

4.4.1 Type of Disasters

The researcher sought to establish the type of disasters which had occurred in schools.

Figure 4.3: Types of Disasters

Figure 4.3 illustrates that 41.7 percent of the schools had experienced a fire while 16.7 percent of the schools had indicated landslide/mudslide. This shows that fires were common in schools, and therefore due to regular occurrences, schools were expected to be ready for them.

The respondents were given a list of items in a table regarding disaster preparedness. They were required to state their agreement levels on a five-point Likert scale. Table 4.8 shows their responses.

4.4.2 Disaster Preparedness Levels

On the items on how they agreed or disagreed with disaster preparedness levels the teachers gave varied responses as shown in Table 4.8.
Table 4.8: Disaster Preparedness Levels

<table>
<thead>
<tr>
<th>Statements</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>The school community undertakes evacuation drills</td>
<td>8</td>
<td>13.3</td>
<td>13</td>
<td>21.7</td>
<td>18</td>
</tr>
<tr>
<td>Evacuation drills are undertaken once a term.</td>
<td>3</td>
<td>5.0</td>
<td>10</td>
<td>16.7</td>
<td>22</td>
</tr>
<tr>
<td>First aid education is provided to the school community.</td>
<td>11</td>
<td>18.3</td>
<td>20</td>
<td>33.3</td>
<td>14</td>
</tr>
<tr>
<td>The school has sufficient first Aid facilities</td>
<td>10</td>
<td>16.7</td>
<td>15</td>
<td>25.0</td>
<td>18</td>
</tr>
<tr>
<td>First Aid kit is easily accessible to most people</td>
<td>4</td>
<td>6.7</td>
<td>16</td>
<td>26.7</td>
<td>23</td>
</tr>
<tr>
<td>The school holds regular disaster preparedness meetings with the school community members</td>
<td>1</td>
<td>1.7</td>
<td>12</td>
<td>20.0</td>
<td>19</td>
</tr>
<tr>
<td>There is adequate security lighting in the school.</td>
<td>14</td>
<td>23.3</td>
<td>34</td>
<td>56.7</td>
<td>8</td>
</tr>
<tr>
<td>Mechanism for Co-Coordinating various disaster activities exist in the school</td>
<td>5</td>
<td>8.3</td>
<td>18</td>
<td>30.0</td>
<td>20</td>
</tr>
</tbody>
</table>

**Key:**
- Strongly agree (SA)
- Agree (A)
- Disagree (D)
- Strongly Disagree (SD)
- Don’t Know (DK)

It can be observed from the table that 58.3 percent of the respondents agreed that first aid education and facilities were available in schools. On the other hand 71.7 percent respondents disagreed that evacuations drills are undertaken and 70 percent respondents too disagreed that school disaster meetings are held. This implies that schools were not adequately prepared to handle disasters.
Table 4.9: Disaster Preparedness

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is adequate security lighting in the school</td>
<td>4.33</td>
<td>0.778</td>
</tr>
<tr>
<td>First Aid kit is easily accessible to most people</td>
<td>4.00</td>
<td>0.739</td>
</tr>
<tr>
<td>The school has sufficient first aid facilities</td>
<td>3.83</td>
<td>1.267</td>
</tr>
<tr>
<td>First aid education is provided to the school community</td>
<td>3.67</td>
<td>1.303</td>
</tr>
<tr>
<td>Mechanisms for co-coordinating various disaster activities exist in the school</td>
<td>3.50</td>
<td>1.314</td>
</tr>
<tr>
<td>The school community undertakes evacuation drills</td>
<td>3.33</td>
<td>1.155</td>
</tr>
<tr>
<td>The school holds regular disaster preparedness meetings with the school community members</td>
<td>3.17</td>
<td>1.193</td>
</tr>
<tr>
<td>Evacuation drills are undertaken once a term</td>
<td>3.00</td>
<td>1.279</td>
</tr>
</tbody>
</table>

Table 4.9 shows that the mean scores ranged from 4.33 to 3.00. The respondents stated that first Aid kit is easily accessible to most people and there is adequate security lighting in the school. Security lighting may have been accomplished due to dangers that lurk in the darkness. A well lit school environment not only enables the members to move with ease but also keep off people who could have ulterior motives. This implies that the respondents were aware of disaster preparedness in schools, but were ill prepared for disasters as confirmed by their earlier responses in the disaster emergency plan.
4.4.3 Reactions to Disasters

The respondents were asked to state their views on the schools’ reactions in case of disasters. Table 4.10 shows their responses.

**Table 4.10: Schools’ Reactions to Disasters**

<table>
<thead>
<tr>
<th>Immediate school reaction</th>
<th>Teachers</th>
<th></th>
<th>Principals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>f  %</td>
<td>f  %</td>
<td>f  %</td>
<td>f  %</td>
</tr>
<tr>
<td>Quick response at the scene</td>
<td>25 41.7</td>
<td>35 58.3</td>
<td>8 66.7</td>
<td>4 33.3</td>
</tr>
<tr>
<td>Evacuation of students</td>
<td>10 16.7</td>
<td>50 83.3</td>
<td>6 50.0</td>
<td>6 50.0</td>
</tr>
<tr>
<td>Panic and confusion</td>
<td>12 20.0</td>
<td>48 80.0</td>
<td>3 25.0</td>
<td>9 75.0</td>
</tr>
<tr>
<td>Curious onlookers</td>
<td>4  6.7</td>
<td>56 93.3</td>
<td>4 33.3</td>
<td>8 66.7</td>
</tr>
</tbody>
</table>

It can be observed that 66.7 percent of the principals indicated that they exercised quick response while 50 percent asserted that they evacuated students from the scene of a disaster. Only 25 percent reported panic and confusion when a disaster occurs. However, the teachers had a different opinion where it was revealed that there was no evacuation of students by 83.3 percent respondents but 80 percent of the teachers indicated there were no panic and confusion as well as curious onlookers. This implies that most school community members did not know what to do when disasters occur which would therefore subject them to suffering that can be avoided.

4.4.4 Action taken during a Disaster

The respondents were asked the action taken in the management of a disaster and Table 4.11 shows their responses.
Table 4.11: Roles Played in Disaster

<table>
<thead>
<tr>
<th>Roles</th>
<th>Teachers</th>
<th>Principals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Co-ordination of the exercise</td>
<td>17</td>
<td>28.3</td>
</tr>
<tr>
<td>Sounded the alarm</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Contacted the emergency numbers</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>Evacuation</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>First aid</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>None</td>
<td>29</td>
<td>48.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The table highlights that 50 percent of the headteachers asserted that during an emergency they coordinated the exercise while only 8.3 percent contacted the emergency number for assistance but the rest did nothing. Only 28.3 percent of the teachers were involved in the coordination of the exercise while majority 48.3 percent teachers and 41.7 percent principals did nothing during disasters. This is an implication that the respondents had difficulties in interaction and coordination in their disaster roles, which may impact negatively on disaster management in schools. This is a sad state of affairs.

4.4.5 Immediate Impacts of Disasters

Previous studies have shown that the effectiveness of a school disaster preparedness plan is measured in the precious lives of students, teachers and administrators that are left unharmed following an incident of school based violence, an accident, a natural disaster or other hazard, (Librera, 2004).
The researcher sought to establish the immediate impacts of disasters in schools.

Table 4.12: Impacts of the Disaster in Schools

<table>
<thead>
<tr>
<th></th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f %</td>
</tr>
<tr>
<td>Destruction of property</td>
<td>30 50.0</td>
</tr>
<tr>
<td>Physical injuries</td>
<td>8 13.3</td>
</tr>
<tr>
<td>Loss of life</td>
<td>7 11.6</td>
</tr>
<tr>
<td>School closure</td>
<td>15 25.0</td>
</tr>
</tbody>
</table>

Table 4.12 shows that 50 percent of the teachers reported that the biggest impact of the disaster was destruction of property while 25 percent cited school closure. Another group of 24.9 percent respondents reported that there were minimal physical injuries and loss of life as other immediate impact of disasters in schools. When the school property is destroyed, students are seriously affected as they struggle to cope with the remaining existing facilities.

4.5 Disaster Preparedness Facilities and Equipments Installed in Schools

The MoE (2001) issued health and safety standard guidelines to educational institutions to help them enhance disaster preparedness. One of the policy guidelines was on fitting schools with sufficient fire fighting facilities and equipments. Owing to this the researcher sought to find out the preparedness facilities and equipments installed in schools.

4.5.1 Provision of Facilities and Equipments for Disaster Preparedness

The respondents were asked to indicate whether their schools were fitted with disaster preparedness facilities and equipments.
Table 4.13: Facilities and equipment for Disaster Preparedness

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th></th>
<th>No</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Lightning arresters</td>
<td>2</td>
<td>3.3</td>
<td>58</td>
<td>96.7</td>
</tr>
<tr>
<td>Fire extinguishers</td>
<td>52</td>
<td>86.7</td>
<td>8</td>
<td>13.3</td>
</tr>
<tr>
<td>Smoke detectors</td>
<td>5</td>
<td>8.3</td>
<td>55</td>
<td>91.7</td>
</tr>
<tr>
<td>Fire alarms</td>
<td>10</td>
<td>16.7</td>
<td>50</td>
<td>83.3</td>
</tr>
</tbody>
</table>

Table 4.13 shows that in most schools, there were fire extinguishers as attested to by 86.7 percent of the teachers, followed by fire alarms. On the other hand, 96.7 percent of the teachers reported that there were no lightning arresters, followed by smoke detectors.

Upon being asked the same question, the principals responded as shown in Figure 4.4.

![Disaster Management Equipment](image)

**Figure 4.4: Disaster Management Equipment**

Figure 4.4 reveals that 83.3 percent of the principals indicated that they had fire extinguishers incase of a fire outbreak in their schools. However, from the result obtained 83.3 percent of the headteachers stated that they did not have reliable lightning arresters while 91.7 percent indicated they lacked smoke detectors. In addition fire alarms were also unavailable in most schools as it was indicated by 75 percent of the respondents. This implies that fires have been more prevalent in this...
region due to the high reporting on the presence of fire extinguishers. Most schools lack some of the essential safety equipments which can be used to sense and warn people during disasters which increase chances of survival.

4.5.2 Repair and Servicing Equipments

The respondents were asked the frequency in which the equipment was serviced/repaired, and their responses are shown in table 4.14.

Table 4.14: Frequency of Repair/Services

<table>
<thead>
<tr>
<th></th>
<th>Principals</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Once per month</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Once per term</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Once per year</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>Not at all</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 4.14 reveals that 41.7 percent principals reported that the equipment was repaired once a year while majority of the teachers 61.7 percent reported that the equipment was not repaired at all. Any servicing beyond three months is not good enough as indicated by 66.7 percent of the principals. There is a sharp contradiction in their responses which according to the researcher the headteachers may not have wanted to be blamed for not repairing the equipments. Any equipment which is not cared for as often as it should, will not perform as expected in times of emergencies.
4.5.3 Evacuation Measures

The researcher sought to establish the adequacy of evacuation measures put in place in school buildings from the respondents.

Table 4.15: Adequacy of Evacuation Measures

<table>
<thead>
<tr>
<th>Evacuation Routes</th>
<th>Teachers</th>
<th>Very Adequate</th>
<th>Adequate</th>
<th>Inadequate</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Emergency exit doors</td>
<td></td>
<td>4</td>
<td>6.7</td>
<td>20</td>
<td>33.3</td>
</tr>
<tr>
<td>Windows without grills</td>
<td></td>
<td>10</td>
<td>16.7</td>
<td>18</td>
<td>30.0</td>
</tr>
<tr>
<td>Wide double stairways</td>
<td></td>
<td>4</td>
<td>6.7</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>Well ventilated and lit corridors</td>
<td></td>
<td>13</td>
<td>21.7</td>
<td>24</td>
<td>40.0</td>
</tr>
<tr>
<td>Open (unobstructed)escape routes</td>
<td></td>
<td>9</td>
<td>15.0</td>
<td>24</td>
<td>40.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evacuation Routes</th>
<th>Principals</th>
<th>Very Adequate</th>
<th>Adequate</th>
<th>Inadequate</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Emergency exit doors</td>
<td></td>
<td>2</td>
<td>16.7</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Windows without grills</td>
<td></td>
<td>1</td>
<td>8.3</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>Wide double stairways</td>
<td></td>
<td>0</td>
<td>0.0</td>
<td>4</td>
<td>33.3</td>
</tr>
<tr>
<td>Well ventilated and lit corridors</td>
<td></td>
<td>2</td>
<td>16.7</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>Open (unobstructed)escape routes</td>
<td></td>
<td>2</td>
<td>16.7</td>
<td>5</td>
<td>41.7</td>
</tr>
</tbody>
</table>

Table 4.15 shows that 41.7 percent of the principals indicated that their school compounds had adequate open escape routes and their classrooms had adequate windows without grills. Additionally 58.7 percent reported that all rooms were adequately well ventilated and lit corridors. On the other hand more than 40.0 percent of the principals indicated that emergency exit doors were inadequate and there were no wide stairways in their schools. Teachers concurred with the principals on the
evacuation measures that schools had adequate open escape route, windows without grills, well ventilated and lit corridors.

4.6 Measures Put in Place to Enhance Disaster Preparedness in Schools

The study sought to establish the measures put in place to enhance disaster preparedness in schools. To establish this, the respondents were asked some questions whose answers are discussed below.

The respondents were first asked whether their schools had emergency funds put aside in the event of a disaster. To this question, 16.7 percent of the principals and the same percentage of teachers indicated that funds were set aside for emergencies while 83.3 percent of the principals and the same percentage of teachers indicated that there were no funds set aside for emergencies. This shows that schools were not adequately prepared for emergencies financially.

The respondents were asked whether there were people who were trained to handle emergencies in their schools. They responded as shown in Figure 4.5.

![Figure 4.5: Schools with Trained Personnel in Disaster Management](image.png)

Figure 4.5 shows that 58.3 percent of the schools had trained personnel on how to handle disaster in case of an emergency while the other 41.7 percent of the principals
indicated that their schools had no trained people who can be able to handle and manage disaster 41.7 percent of the teachers indicated that their schools had people trained in disaster management while 58.3 percent indicated their schools did not have trained personnel on disaster management.

The respondents were further asked to indicate what the trained personnel were trained in. Their responses are shown in Table 4.15.

<table>
<thead>
<tr>
<th>Training Areas</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
<th>Yes</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing disasters in school</td>
<td>12</td>
<td>48</td>
<td>20.0</td>
<td>6</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>Operating fire fighting gadgets</td>
<td>23</td>
<td>37</td>
<td>38.3</td>
<td>5</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>Contacting police or emergency numbers</td>
<td>13</td>
<td>47</td>
<td>21.7</td>
<td>4</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>Operating an emergency kit</td>
<td>13</td>
<td>47</td>
<td>21.7</td>
<td>4</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>Evacuation measures</td>
<td>12</td>
<td>48</td>
<td>20.0</td>
<td>2</td>
<td>10</td>
<td>83.3</td>
</tr>
<tr>
<td>Fire fighting techniques</td>
<td>20</td>
<td>40</td>
<td>33.3</td>
<td>4</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>Servicing of the gadgets</td>
<td>3</td>
<td>57</td>
<td>5.0</td>
<td>12</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Contact person to give directions</td>
<td>5</td>
<td>55</td>
<td>8.3</td>
<td>2</td>
<td>10</td>
<td>83.3</td>
</tr>
</tbody>
</table>

Table 4.16 shows that all the principals who participated in the study indicated that servicing of the gadgets was the major topic revised during the training, 50.0 percent of the principals indicated that they covered prevention of disaster within the schools compound while 41.7 percent indicated that they were trained on the operation of fire gadgets in case of a fire outbreak. On the contrary, more than 60 percent of principals indicated that they were never taught on evacuation measures, operating an emergency kit and fire fighting techniques. In addition they reported that their schools
were not familiar with the persons to contact to give directions in case of an emergency. Over 80 percent of the teachers indicated that they were not trained in preventing disasters in schools, evacuation measures, servicing the gadgets and also the contact person to give directions.

4.7 Respondents suggestions on how to enhance disaster preparedness in secondary schools

The respondents were asked to give recommendations on how to enhance disaster preparedness in schools. Their responses are shown in table 4.17 below:

**Table 4.17 Suggestions on how to Enhance Disaster Preparedness in Schools**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organize frequent workshops and seminars</td>
<td>50</td>
<td>83.3</td>
</tr>
<tr>
<td>Regular inspection of schools by QASO</td>
<td>40</td>
<td>66.6</td>
</tr>
<tr>
<td>The Government should provide funds for enhancing disaster preparedness in schools</td>
<td>39</td>
<td>65</td>
</tr>
</tbody>
</table>

Majority 83.3 percent of the respondents indicated that relevant authorities should organize frequent workshops and seminars for school community members to teach them on how to manage disasters as well as how to perform simple first aid to injured people. The school authorities should liaise with the organization such as Red Cross to accomplish this.

The study reviewed that 66.6 percent of the teachers suggested that the MoE should inspect and set ministerial regulations and guidelines on safety issues in all schools, therefore ensuring that the schools had put in place the mechanism and measures required. Schools inspections by the QASO should not be concentrated in problematic schools but rather to all and in all aspects so as to ensure safety of the school community members.
The government should ensure that all the safety standards are adhered to according to the safety policy. It should be implemented uniformly in all schools irrespective of status and category. Further 65 percent of the respondents suggested that funds should be provided to enable the schools to prepare for and manage disasters.

4.8 Discussion of the Findings

4.8.1: Disaster preparedness policies put in place in public secondary schools.

Majority 65 percent of the teachers indicated that their schools did not have disaster preparedness policies; although the principals acknowledged that they existed. There seems to be a contradiction between teachers’ and principals’ responses. This could be due to the fact that there could be disaster emergency policies in schools but the teachers knew nothing of them. Librera (2004) notes that there should be policies, plans and guidelines on disaster preparedness. These guidelines include risk and vulnerability assessment, institutional framework and an effective information system.

On the core highlights of the disaster preparedness policy, the study revealed that majority of the respondents highlighted fire extinguishers in fire prone areas as well as a clearly marked meeting/assembly point incase of a disaster. Others highlighted doors opening outwards and emergency doors. However, use of escape routes from buildings and methods of alertness incase of an emergency were disregarded by school authorities despite their importance in times of disasters.

The respondents were in agreement on the importance of disaster emergency plans although many schools did not have them. This implies that most schools were not adequately prepared for emergencies.

The study revealed that majority of the schools had warning alarms and re-union grounds for all school personnel. These findings are in contradiction with the previous studies which indicated that most schools did not have reliable alarm
systems (Nderitu, 2009). However, there were no disaster committees/ crisis team organized in the schools, no evacuation routes and alternative learning areas were lacking. Further, emergency exits as vital as they are were not available in most schools and so were instructions incase of a disaster. It is therefore clear that the things expected to be included in the emergency plans were not applied in most schools. This is beside the fact that an inventory of all items that require attention would be essential for salvage (FEMA, 2007). This can be attributed to lack of awareness on disaster management policies, Lack of funds or ignorance. Therefore the findings confirmed that most schools are not prepared for disasters.

4.8.2 Level of disaster awareness among the school community members

The study findings revealed that the respondents were aware of various disasters that had been experienced in the schools .The disaster most faced in schools was fire, while landslide/mudslide are minimal in this region. As earlier noted in the literature review many fires, in schools were started deliberately. An alarming trend is that deliberately set fires were generally set from inside the school increasing the risk to the occupants and the property. Moreover strikes, negligence in the laboratory and the kitchen, electric and electronic overload, poor electrification had also led to fire disasters in schools (Fire Fighter Forum, 2009). Therefore, schools are expected to be ready for them.

Majority of the respondents in the study revealed that first aid kit was easily accessible to most people. First Aid facilities and education were vital in schools as they enable the members to handle the effects of disasters. The study revealed that there was adequate security lighting in the school which was in agreement with Nderitu (2009),that a well lit school environment would provide easy escape to students in case disaster strikes; besides it would enable rescuers to work with ease in
an attempt to salvage school property. However, evacuation drills and regular disaster preparedness meetings with the school community members were never carried out in majority of the schools. This was despite the fact that fire drills were a major safety requirement of MoE which has not been implemented probably due to the cost of hiring fire experts to conduct them. Practice drills reduced time wastage during an actual evacuation.

The findings of the study show that most of the school took a quick response at the scene to avoid damaging of the property, injuries or death occurrences. Further the study revealed that there was proper coordination of the exercise and emergency numbers were contacted for assistance. There was evacuation of students and no panic and confusion as well as curious onlookers. This implies that the schools were aware of disaster management and the role to be played by each individual in combating disasters. It was, therefore important, to have all the concerned parties in the school in “perfect” working relationship and high alert for them to contribute appropriately, (Senge, et al., 1994).

Destruction of property and school closure was identified as the biggest impact and challenges of a disaster. Although physical injuries and loss of life were few, schools should ensure that students were protected from harm. These findings suggest that school property damage and school closure often left the occupants out of school for long periods in the recovery period. Some of them will not get another chance to attend school, which deepens the vicious cycle of educational lack and vulnerability.

As Nderitu (2009) asserts, the degree of preparedness of a school’s entire system makes the difference should a disaster occur. Despite the integral nature of school in the life, health and protection of students, there had been remarkably little attention devoted to disaster preparedness in schools (Danielson, et al, 2009). Therefore, it is
important for educational administrators to reduce vulnerability or avoid destruction and human misery that follow in the wake of disasters. They can neutralize imminent disasters or minimize their effects through disaster preparedness. Preparedness is achieved and maintained through a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action, (FEMA, 2009).

4.8.3 Disaster preparedness facilities and equipments installed in schools

Data from the study revealed that in most schools there were fire extinguishers in case of a fire outbreak. This was in agreement with MOE (2001) Health and Safety Standards Policy that schools should be fitted with fire fighting facilities and equipments. As Nderitu (2009) notes, safety equipments in schools and other public places should be mandatory in preparation for disaster. These equipments include; fire extinguishers, fire blankets, alarms, sand, water points and hoses. It was imperative that schools acquire functional fire extinguishers. These facilities and equipment must be properly marked and appropriate signs placed in conspicuous points of a building (Fire Fighter Forum, 2009).

Moreover, findings from the study indicated that fire alarms, lightning arresters and smoke detectors were not available in the schools. In this region lightning arresters were few because of few lightning episodes. Fire alarms, lightning arresters and smoke detectors should be installed properly and at strategic places of the buildings for them to remain functional. In the event of a disaster, the school community members should raise the alarm, recognize it as well as act on it. Further, the findings revealed that most of the disaster preparedness facilities and equipment installed were not repaired at all. Any servicing beyond three months was not good enough as revealed. This implies the equipment was not cared for as often as it should, and may therefore not perform as expected in times of emergencies. It was advisable for the
schools to contact certified specialists to inspect, clean and repair the facilities and equipment.

Majority of the respondents revealed that their school compounds had adequate open escape routes and their classrooms had adequate windows without grills. All rooms were adequately well ventilated and corridors lit. These findings are in agreement with MoE’s Health and Safety Standards Guidelines (2001). However, the findings showed that majority of the schools had inadequate emergency exit doors and no wide stair ways. The study findings reviewed that although the MoE (2001) had recommended that all learning institutions should have adequate emergency exit door ways and wide stair ways at both opposite ends of the building free from any obstructions, most schools had not adequately implemented this regulation. These findings show a tendency to disregard these recommendations by school authorities.

4.8.4 Measures put in place to enhance disaster preparedness in schools.

The study revealed that most schools did not set aside funds for emergencies in the event of a disaster. It is worth noting that most schools suffer financial flow crisis thus cannot set aside funds for emergencies. Although the MoE is subsidizing secondary education, these funds proved to be insufficient besides being disbursed late.

Majority of the respondents indicated that most schools had no or had very little training of personnel who can handle and manage disasters. Moreover, servicing of the gadgets was the major topic revised during the training which did not concentrate on topics such evacuation measures, how to operate an emergency kit and fire fighting techniques. Previous studies established that no matter how much effort had been put into creating the perfect disaster plan, it would largely be ineffective if the staff and students were not aware of it, or if it cannot be found during a disaster, (Patkus and Walpole, 2007). Nderitu (2009), while investigating the implementation of safety
standards Guidelines in Secondary schools, found out that headteachers were not trained on disaster management nor was the school community.

It will therefore mean that the school community members can not be called upon in the event of a disaster. Training of the personnel had financial implication to the school which can be the main reason for lack of training. However, the government should ensure that in-service courses on disaster preparedness and management were offered to the school community members. Munyasi (2002), noted that an enlightened community will have the knowledge and skills to prevent and/or mitigate the occurrence of disasters.

4.8.5 Suggestions on how to enhance disaster preparedness in schools

The study respondents suggested frequent workshops and seminars for school community members to teach them on how to manage disasters as well as how to perform simple First Aid to injured people, which can be conducted by organizations such as the Kenya Red Cross. These findings are in agreement with Okumbe, (2001) who points out that an effective safety programme should seek to provide people with the much needed information on what to do, what not to do and who else to do what in order to enhance safety in disaster management training.

Majority of the respondents suggested that QASO should inspect all schools to ensure ministerial regulations and guidelines on safety issues are adhered to which agrees with Nderitu, (2009) who points out that school inspections should not be concentrated on problematic schools because some schools could experience disasters emanating from inadequate implementation of the safety guidelines. In addition, the government should provide funds to enable schools prepare for and manage disasters as indicated by the then Education Minister Professor Sam Ongeri during the launch
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1: Introduction

This chapter presents the summary of the study, conclusions and recommendations arrived at. It also gives suggestions for further studies.

5.2 Summary

The purpose of this study was to investigate disaster preparedness and management among teachers and principals in public secondary schools in Githunguri District. The respondents of the study comprised of 60 teachers and 12 principals. The data was therefore analyzed based on 72 respondents. Given below is a summary of the main study findings:

Objective 1: Disaster preparedness policies in place in public secondary schools

The study established that 65 percent of the schools did not have disaster preparedness policies according to the teachers. Contrary to this, 66.7 percent of the principals acknowledged that they existed. It emerged that the core highlights of the disaster preparedness policies in schools are fire extinguishers in fire prone areas as indicated by 86 percent respondents, clearly marked meeting/assembly points (70 percent), doors opening outwards and emergency doors (63 percent). However, 62 percent of the schools disregarded use of escape routes from buildings and methods of alertness in case of an emergency (79 percent). Majority 58.3 percent of the schools’ emergency plans had warning alarms and reunion grounds for all school personnel but 83.3 percent of the respondents reported lack of disaster committee/crisis teams as well as evacuation routes, while 91.7 percent indicated lack of alternative learning areas, emergency exits as well as instructions in case of a disaster.
The study therefore revealed that most of the emergency plans in the schools were not adequate.

**Objective 2: Level of Disaster Awareness among the school community members**

The study found that 58.3 percent of the school community members were aware of various disasters that had been experienced in the schools, the most common being fire. It emerged that 58.3 percent respondents agreed that First aid education and kits are easily accessible to most people and 80 percent schools are well lit. However, evacuation drills and regular disaster preparedness meetings with the school community members were never carried out in 71.7 percent of the schools.

It was revealed that 66.7% of the schools took a quick response at the scene of a disaster, there was proper coordination of the exercise by 50 percent respondents and only 8.3 percent contacted emergency numbers for assistance. In 50 percent schools there was evacuation of students, no panic and confusion (75 percent) as well as curious onlookers (66.7 percent) whenever a disaster occurred. The biggest impact and challenges of a disaster were identified as destruction of property (50 percent) and school closure (25 percent).

**Objective 3: Disaster Preparedness facilities and equipment installed in schools:**

The study revealed that 86.7 percent of the schools had installed fire extinguishers. However, it emerged that fire alarms (83.3 percent), lightning arresters (96.7 percent) and smoke detectors (91.7 percent) were inadequate in the schools. In addition, the disaster preparedness facilities and equipments were not repaired at all as indicated by 61.7 percent respondents while 68.4 percent of the schools did not have emergency exit doors nor wide stair ways.
A significant proportion of 58.4 percent of the school compounds had adequate open escape routes and their classroom windows were without grills. All rooms were adequately well ventilated and corridors lit as revealed by 75 percent respondents.

**Objective 4: Measures put in place to enhance disaster preparedness in schools**

The study established that 83.3 percent of the schools did not set aside funds for emergencies in the event of a disaster. Moreover, it emerged that 58.3 percent of the schools had nor or had very little training of personnel who could handle and manage disasters. The few respondents who were trained mainly revealed servicing of the gadgets as the major topic during training as indicated by all the respondents.

**Objective 5: Suggestions on how to enhance disaster preparedness in secondary schools**

The suggestions from the study were that 83.3 percent respondents were for frequent workshops and seminars for the school community members on how to manage disasters.

Further, 66.6 percent suggested inspections by QASO should be done in all schools to ensure adherence to safety standard guidelines. The government should provide funds for enhancing disaster preparedness in schools was suggested by 65 percent respondents.

**5.3: Conclusions**

Based on the findings of the study, it can be concluded that:

Most schools had a disaster preparedness policy received from the MoE (2001) but it was largely ineffective. This is because most of the school community members were not aware of their existence.
Most schools in Githunguri District had experienced disasters and therefore the awareness level in the region was high. The most common disaster faced in schools was fire; this can be attributed to the school unrests in the district. The schools quickly responded to disasters as they arose although there were some principals who did nothing. This can be supported by the high rate of property destruction and school closure which are the greatest impacts of disasters.

Though most of the schools had fire extinguishers and fire alarms it emerged that the equipments were hardly replaced over time and were not repaired making them useless in times of emergency.

Schools had adequate security lighting and first aid kit accessible to all. They also had adequate open escape routes, well ventilated and lit corridors. Their classrooms had adequate windows without grills therefore making evacuation easy in times of disasters. This implies that the headteachers have tried to implement the MoE safety policy. However, exit doors and wide stair ways were inadequate which can lead to a stampede in the event of a disaster. The schools did not set aside funds for emergencies and the school community members were not trained to handle and manage disasters which led to panic and confusion in the event of a disaster. There is need to enhance disaster management training for the school community members.

These conclusions indicate that there has been remarkably little attention devoted to disaster preparedness and management in schools which exposes the school community members to disasters some of which can be avoided.
5.4: Recommendations of the study

On the basis of data collected and analyzed the researcher recommends that:

1. Each school should have a disaster awareness and preparedness department whose head should be recognized by Teachers Service Commission. The members of this department should be conversant with disaster management and first aid measures.

2. The MoE should introduce the disaster preparedness theory and practice into schools’ and training institutions’ curriculum at all levels. This will equip the members with adequate skill required for prevention as well as the management of disasters.

3. The MoE should provide the school community members with compulsory in-service disaster management training.

4. The government should set aside funds for disaster preparedness for schools.

5. Since disaster management policies are mainly issued by the government yet largely ineffective in schools, the government should ensure these policies are implemented and adhered to.

6. Disaster preparedness audit should be conducted regularly by an agent such as Red Cross or any other agency which is well versed in disaster preparedness.

5.4.1: Recommendations for Further Research

1. The study should be replicated in other regions both in public and private schools.

2. A study on the level of disaster preparedness in schools with children with special needs.

3. A study on the effects of poor disaster management on the education performance.
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APPENDICES

APPENDIX I

LETTER OF INTRODUCTION

Kenyatta University,
Department of
Educational
Management, Policy and
Curriculum Studies,
P.O. Box 43884,
Nairobi.

Dear Sir/Madam,

REF: RESEARCH

I am a Post Graduate student interested in carrying out research on disaster preparedness in public secondary schools.

I may need some data from your school, so, please assist, through giving honest responses to the attached questionnaire. The data collected will be treated with confidentiality and reported in terms of the entire population. Therefore do not write your name or the name of the school anywhere in the questionnaire.

Your positive response will be highly appreciated.

Thank you in advance.

Kimathi, J. K.
APPENDIX II
PRINCIPAL’S QUESTIONNAIRE
INSTRUCTIONS

This questionnaire is intended to help in an investigation into school disaster preparedness in secondary schools. All information given will be treated with confidentiality and your co-operation will be highly appreciated. You may not sign in your name or that of your school.

SECTION A: PERSONAL / SCHOOL DETAILS

Please answer the questions appropriately by placing a tick [✓] against your option or by filling in the blank space provided.

1. What is your gender?
   Male [   ]       Female [   ]

2. Indicate the number of years you have held the following positions
   (i) Headteacher
       1 - 5 years [   ]   6 - 10 years [   ]   11 - 15 years [   ]
       16 - 20 years [   ]   20 and above [   ]
   (ii) Headteacher in the present school
       1 - 5 years [   ]   6 - 10 years [   ]   11 - 15 years [   ]
       16 - 20 years [   ]   20 and above [   ]

3. Type of your school
   Boys [   ]       Girls [   ]       Mixed [   ]

4. What is the status of your school?
   Boarding [   ]       Day [   ]       Mixed day and boarding [   ]

5. (a) What is the enrolment level of the school?
   .................................................................................................................................................................................................................
   .................................................................................................................................................................................................................

   (b) Do you have storey buildings in the school?
       Yes [   ]       No [   ]
SECTION B: DISASTER PREPAREDNESS

6. (a) Is there a disaster management / preparedness policy or circulars in your school?

Policy or circulars in your school?

Yes [ ] No [ ]

If yes, what is its core highlights?

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7. (a) Has your school ever experienced a disaster?

Yes [ ] No [ ]

(b) If yes, what sort of disaster was it?

Fire [ ] Transport [ ]

Flooding [ ] Landslide/mudslide [ ]

Other (specify) ……………………………………………………………………………

8. (a) What were the immediate school reactions?

Quick response of the scene [ ]

Evacuation of students [ ]

Panic and confusion [ ]

Curious onlookers [ ]

Other (specify) ……………………………………………………………………………

What role did you play during the disaster?

Co-ordination of the exercise [ ]

Sounded the alarm [ ]

Contacted the emergency numbers [ ]
Evacuation [ ]
First aid [ ]
Other (specify) ………………………………………………………………………

What were the immediate impacts of the disaster?
Destruction of property [ ]
Loss of life [ ]
Human injuries [ ]
School closure [ ]
Other (specify) ………………………………………………………………………

9. (a) Does your school have emergency funds put aside in the event of a disaster?
Yes [ ] No [ ]

(b) Does the school have a disaster emergency plan?
Yes [ ] No [ ]

(c) If Yes, from the list below tick (✓) the things found in the plan.

(i) Disaster committee / crisis team [ ]
(ii) Instructions incase of a disaster [ ]
Warning alarms [ ]
Emergency exits [ ]
Evacuation routes [ ]
Re-union ground for all school personnel [ ]
Offsite location area [ ]
Telephone and who to contact [ ]
Any other (specify)
………………………………………………………………………

79
10. (a) How do people access the information in 9(c) above?

Notice boards [ ]
Office [ ]
School files [ ]
Any other (specify) .......................................................................................... [ ]

(b) How often are the plans reviewed?

Once every three months [ ]
Once every six months [ ]
Once every year [ ]
Not at all [ ]

11. (a) Are there people trained on how to handle disasters in your school?

Yes [ ]
No ( ) [ ]

(b) If yes, who conducted the training?

.............................................................................................................................................

(c) What have they been trained in? Tick (√) where applicable

Preventing disasters in school [ ]
Operating fire fighting gadgets [ ]
Contacting police or emergency numbers [ ]
Operating an emergency kit [ ]
Evacuation measures [ ]
Fire fighting techniques [ ]
Servicing of the gadgets [ ]
Contact person to give directions [ ]
Other (specify)

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12. (a) Is the school fitted with disaster preparedness facilities and equipments? Tick (√) where applicable.

80
Lighting arresters [ ]
Fire extinguishers [ ]
Smoke detectors [ ]
Fire alarms [ ]
Other (specify) ………………………………………………………………………..

(b) How often are they serviced and repaired?

Once per month [ ]
Once per term [ ]
Once per year [ ]
Not at all [ ]

13. Please indicate the adequacy of evacuation measures put in place in school buildings. Tick (✓) as appropriate.

<table>
<thead>
<tr>
<th>Evacuation routes</th>
<th>Very adequate</th>
<th>Adequate</th>
<th>Inadequate</th>
<th>None</th>
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<tbody>
<tr>
<td>1) Emergency exit doors</td>
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<td>5) Open (unobstructed) escape routes</td>
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</table>
14. Please rate the following statements using the key below. Tick (√) as appropriate

**Strongly agree (SA) Agree (A) Disagree (D) Strongly Disagree (SD) Don’t Know (DK)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
<th>DK</th>
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</thead>
<tbody>
<tr>
<td>The school community undertakes evacuation drills</td>
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<td>Evacuation drills are undertaken once a term</td>
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What recommendations would you give to enhance disaster preparedness in schools?

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**THANK YOU FOR YOUR CO-OPERATION**
APPENDIX III
TEACHER’S QUESTIONNAIRE

INSTRUCTIONS

This questionnaire is intended to help an investigation into school disaster preparedness in secondary schools. All information given will be treated with confidentiality and your kind cooperation will be highly appreciated. You may not sign in your name or that of your school.

SECTION A: PERSONAL / SCHOOL DETAILS

Please answer the questions appropriately by placing a tick (✓) against your option or by filling in the blank space provided.

1. Indicate your teaching experience
   - 1 - 5 years [ ]
   - 6 - 10 years [ ]
   - 11 - 15 years [ ]
   - 16 - 20 years [ ]
   - 21 years and above [ ]

2. For how long have you taught in this school?
   - 1 - 5 years [ ]
   - 6 - 10 years [ ]
   - 11 - 15 years [ ]
   - 16 - 20 years [ ]
   - 21 years and above [ ]

3. Type of your school
   - Boys [ ]
   - Girls [ ]
   - Mixed [ ]

4. What is the status of your school?
   - Boarding [ ]
   - Day [ ]
   - Mixed day and boarding [ ]

9. What is the enrolment level of the school?
   ……………………………………………………………………...
SECTION B: DISASTER PREPAREDNESS

5. (a) Is there a disaster management / preparedness policy or circulars in your school?

Yes [ ]
No [ ]

(b) If yes, what is its core highlights?

(i) ……………………………………………………………………………………

(ii) …………………………………………………………………………………

(iii) ………………………………………………………………………………..

6. (a) Has your school ever experience a disaster?

Yes [ ]
No [ ]

(b) If yes, what sort of disaster was it?

Fire [ ] Transport [ ]
Flooding [ ] Landslide [ ]
Other (specify) ……………………………………………………………………………

7. (a) What were the immediate school reaction?

Quick response at the scene [ ]
Evacuation of students [ ]
Panic and confusion [ ]
Curious onlookers [ ]
Other (specify) ……………………………………………………………………………

(b) What role did you play during the disaster?

(i) Co-ordination of the exercise [ ]
(ii) Sounded the alarm [ ]
(iii) Contacted the emergency numbers [ ]
(iv) Evacuation  [  ]
(v) First Aid  [  ]
(vi) Other (specify)
…………………………………………………………………….

(c) What were the immediate impacts of the disaster?

(i) Destruction of property  [  ]
(ii) Human injuries  [  ]
(iii) Loss of life  [  ]
(iv) School closure  [  ]
(v) Other (specify)
…………………………………………………………………….

8. (a) Does your school have emergency funds put aside in the event of a disaster?
Yes  [  ]  No  [  ]

(b) Does the school have a disaster emergency plan?
Yes  [  ]  No  [  ]

(c) If Yes, from the list below tick (✓) the things found in the plan

(i) Disaster committee/crisis team  [  ]
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(iii) Warning alarms  [  ]
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(v) Evacuation routes  [  ]
(vi) Re-union ground for all school personnel  [  ]
(vii) Offsite location area  [  ]
(viii) Telephone and who to contact  [  ]
(ix) Any other (specify)
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9. (a) How do people access the information in 8(c) above?

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(c) What have they been trained in? Tick (✓) where applicable.

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(iii) Contacting police or emergency numbers [ ]
(iv) Operating an emergency kit [ ]
(v) Evacuation measures [ ]
(vi) Fire fighting techniques [ ]
(vii) Servicing of the gadgets [ ]
(viii) Contact person to give directions [ ]
(ix) Other (Specify)

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12. (a) Is the school fitted with disaster preparedness facilities and equipments? Tick (√) where applicable’

(i) Lighting arresters
(ii) Fire extinguishers
(iii) Smoke detectors
(iv) Fire alarms
(v) Other (specify)

……………………………………………………………………………..

(b) How often are they serviced and repaired?

(i) Once per month
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15. What recommendations would you give to enhance disaster preparedness in schools?

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### APPENDIX IV

#### RESEARCH BUDGET

<table>
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<tr>
<th>No.</th>
<th>Vote heads</th>
<th>Activity</th>
<th>Amount (Kshs)</th>
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<tr>
<td>1.</td>
<td>Transport</td>
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<td>10,000</td>
</tr>
<tr>
<td>2.</td>
<td>Equipment and supplies</td>
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<td>5,000</td>
</tr>
<tr>
<td>3.</td>
<td>Data collection</td>
<td></td>
<td>8,000</td>
</tr>
<tr>
<td>4.</td>
<td>Data analysis</td>
<td></td>
<td>8,000</td>
</tr>
<tr>
<td>5.</td>
<td>Direct cost</td>
<td>Reproduction (photocopying), postage communication</td>
<td>4,000</td>
</tr>
<tr>
<td>6.</td>
<td>Indirect costs: overhead or administrative costs</td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td>7.</td>
<td>Secretarial services</td>
<td>Typing and printing</td>
<td>8,000</td>
</tr>
<tr>
<td>8.</td>
<td>Reporting</td>
<td>Traveling expenses/accommodation/meals</td>
<td>12,000</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
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<td>58,000</td>
</tr>
</tbody>
</table>