

**EFFECT OF DISASTER AWARENESS STRATEGIES ON PREPAREDNESS
IN PUBLIC PRIMARY SCHOOLS IN THARAKA-NITHI COUNTY, KENYA**

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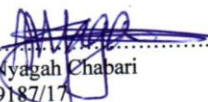
**A Thesis Submitted to the Graduate School in Partial Fulfillment of the
Requirements for the Award of the Degree of Master of Science in Community
Development of Chuka University**

**CHUKA UNIVERSITY
OCTOBER 2025**

DECLARATION AND RECOMMENDATIONS

Declaration

This thesis is my original work and has not been presented for an award of diploma or conferment of degree in any other University or Institution.

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DEDICATION

I dedicate this work to my late wife Elizabeth Kagendo who encouraged me to study and finalize, my children for their patience, understanding and support while doing the studies and my brother Samson Kithaka who stood with me and encouraged me not to defer despite the odds.

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ABSTRACT

In Tharaka South Sub-County, Tharaka Nithi County, primary schools frequently experience floods, drought, and ethnic conflict, exposing pupils and teachers to safety risks and educational disruptions. This study examined the impact of disaster awareness strategies on disaster preparedness in public primary schools, focusing on disaster awareness training, the availability of preparedness materials, school disaster management policies, and community participation. The study was guided by Social Learning Theory and Ecological Systems Theory and employed a descriptive survey design. Data were collected from 173 teachers, five head teachers, and four key informants using semi-structured questionnaires and interviews. Quantitative data were analyzed using SPSS Version 25, while qualitative data underwent thematic analysis. Results revealed significant positive correlations between disaster preparedness and disaster awareness training ($r = 0.623$, $p < 0.01$), availability of preparedness materials ($r = 0.587$, $p < 0.01$), school disaster management policies ($r = 0.546$, $p < 0.01$), and community participation ($r = 0.605$, $p < 0.01$). Schools with regular drills, accessible emergency kits, active safety policies, and strong community engagement recorded higher preparedness levels. Qualitative findings supported these trends and highlighted challenges, including inadequate funding, irregular training schedules, and weak policy enforcement. The study concludes that effective disaster awareness strategies significantly enhance preparedness in public primary schools. It recommends integrating disaster education into the curriculum, institutionalizing regular training, improving access to preparedness resources, strengthening policy implementation, and fostering community-school partnerships to enhance disaster resilience.

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LIST OF ABBREVIATIONS

DRR	Disaster Risk Reduction
EPR	Emergency Preparedness and Respond
MOE	Ministry of Education
NACOSTI	National Commission for Science, Innovation and Technology
SPSS	Statistical Packages for Social Sciences
TA	Thematic Analysis
UK	United Kingdom
UNICEF	United Nations International Children’s Emergency Fund
USA	United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

School safety is not only a human concern but also a legal obligation, as schools can be held accountable if they fail to provide a safe and secure environment for learners (Rico, 2019). Paci-Green et al (2020) emphasize that schools are expected to be safe spaces, serving as the second most important environment for children's development, after the home, where they acquire knowledge and skills. To promote safety, schools and other educational institutions implement various safety protocols designed to protect both students and staff (Oktari et al., 2018).

School safety and disaster preparedness have increasingly become a global priority, guided by both international and national frameworks. The International Labour Organization (ILO) standards on Occupational Safety and Health emphasize the right of all individuals, including learners and education staff, to a safe and healthy environment, thereby reinforcing the need for preventive and protective measures in learning institutions. Similarly, the Pressure and Release (PAR) model by Wisner et al. (2004) provides a useful analytical lens for understanding how underlying root causes, dynamic pressures, and unsafe conditions interact to create vulnerability, highlighting the need to address both immediate risks and structural factors. In Kenya, these principles are operationalized through the Safety Standards Manual for Schools (2008), which sets out minimum safety requirements and roles for stakeholders in ensuring secure learning environments. Anchoring this study within these frameworks underscores the importance of adopting structured, policy-driven approaches to strengthen disaster preparedness in schools.

Disasters can harm schoolchildren's psychological well-being and disrupt their education (Wang, 2016). However, regardless of the situation, children are entitled to certain rights under the United Nations Convention on the Rights of the Child. The United Nations International Children's Emergency Fund (UNICEF) defines a disaster as an event that causes significant harm to people and the environment, disrupting normal life, displacing communities, and resulting in loss of life. In the school context, disaster is often viewed as a calamitous event that causes injuries,

fear, panic, distress, or even death of the pupils, which includes heavy storms, floods, fire, earthquakes, and school violence (Mutch, 2018). Disaster awareness, therefore, involves understanding and acquiring the knowledge and skills necessary to identify, respond to, and mitigate disaster risks. According to Okoli et al (2024), disaster awareness in schools can be promoted through measures such as posting safety rules, installing firefighting equipment, ensuring clear evacuation routes, and maintaining school infrastructure. Additionally, awareness can be enhanced through educational methods, including songs, media, and science lessons focused on disaster risk management (Newnham et al., 2023).

Luetz (2020) avers that disaster preparedness involves strategies that enable institutions, such as schools, to respond effectively and recover quickly when disaster strikes. These strategies focus on ensuring that necessary resources are accessible, that responses are effective, and that those entrusted with the responsibility are well-trained to deliver effective outcomes (Luetz, 2020). According to Atkinson and Fowler (2023), to respond effectively to disasters, communities must be well-informed, educated, trained, and sufficiently equipped. Omari (2021) emphasizes the importance of including disaster risk reduction (DRR) in the school curriculum since it helps to establish a culture of readiness from a young age. This integration is critical in instilling knowledge and awareness in schoolchildren and instructors about the preparation of important safety items, early warning indications of disasters, and disaster-reduction tactics and approaches (Baytiyeh, 2019).

In the United States of America, incidences of disasters are not common in elementary schools. However, when they occur, they cause disruptions in studies and present serious threats to both schoolchildren and staff (Gin et al., 2016). A notable incidence was caused by the fire that destroyed many schools, causing panic among the schoolchildren; and causing closure of several schools in California. In other instances, in 2017 reports of the occurrence of a hurricane in Florida that caused massive destruction to schools called for urgent disaster management intervention for the evacuation of children and staff to safety (Tyler et al., 2019). According to a 2007 assessment by the US Fire Administration, there were no recorded school-related fire fatalities during that time, but the impact on people's lives was nevertheless

significant (Abrash Walton, 2021). The implementation of safety regulations and intervention are responsible for this disaster preparedness in the US coupled with functional firefighting systems, regular fire drills, and training of occupants in handling fire emergencies in institutions including elementary schools (Aldrich, 2015).

A survey conducted by the Arson Control Forum in 2006 revealed that primary schools reported fewer fire incidents compared to secondary schools, where nearly half of the schools surveyed had experienced a serious fire to require fire and rescue services (Newnham et al., 2023). Fortunately, the government has raised awareness among schoolchildren by providing fire safety education and offering guidance on fire prevention, risk assessment, and anti-arson measures. Fire incidents in both the UK and the USA share some similarities, particularly in the preventive and protective measures and equipment that have been implemented (Chaudhary & Piracha, 2021).

In China, incidents of natural disasters, such as floods and earthquakes, have caused significant destruction to schools and other educational infrastructure. Similarly, in 2001 tragic collapse of a multi-story building on schoolchildren in Fujian province shocked the country due to the massive loss of lives of children and caused fear and panic in the institutions of learning (Mirzaei, et al., 2020). Further, the 2008 Wenchuan earthquake reported in Sichuan Province in China resulted in losses of monumental proportions, destroying schools and claiming the lives of schoolchildren and staff (Hu et al., 2023). In another incidence, floods caused by heavy rains were experienced in Southern China in 2020, interrupted learning, displacing many pupils and schools reported marooned by flood waters (Wang et al., 2023). The 2013 floods in Uttarakhand, India, and Cambodia in 2020 caused a huge number of children to be displaced, leading to catastrophic humanitarian situations (Annan, 2022). China, Cambodia, and India are among the nations with functional evacuation and disaster preparedness systems. Primary schools in China and Cambodia have operational evacuation systems and well-defined strategies to deal with such situations; in India, drill exercises have been implemented in schools as part of initiatives to raise awareness and prepare for disasters (Hu et al., 2023).

In the African context, disasters such as floods, storms, conflicts, and fires are more prevalent than in other regions taking a toll on educational institutions particularly primary schools (Fu & Xhang, 2024), occasionally causing panic and fear among schoolchildren. In Botswana, extreme weather events, such as droughts, lead to severe water shortages in primary schools and local communities. This scarcity often results in limited access to essential resources, which can trigger stampedes, because serious injuries and even lead to death as schoolchildren struggle to compete for scarce food and water (Mutasa, 2016).

In Nigeria, reports of floods have been over the years hit headlines, particularly during the rainy seasons causing massive destruction of learning materials, and school infrastructure and causing school closures for months (Luetz, 2020). In 2019, devastating floods wreaked havoc on primary schools, destroying classrooms and flooding fields and farms in Uganda, leading to the closure of schools and displacement of people (Ketlhoilwe, 2022). In Ghana, a fire at a primary school in 2017 destroyed classrooms and essential learning resources, leading to the closure of the school (Mhaka-Mutepfa, 2019). Effective disaster awareness and management techniques are urgently needed in African primary schools, yet a significant gap remains in the implementation of disaster preparedness policies. This highlights the need for a proactive, contemporary approach to disaster relief and school safety initiatives. Such strategies should involve collaborative efforts from school safety teams, parents, schools, and local authorities to address the unique needs of each school (National Research Council, 2011).

In Kenya, as in other parts of the region, disasters in primary schools are often caused by overcrowding, poor infrastructure, and acts of arson by students. These issues are further exacerbated by the growing number of schoolchildren, inadequate infrastructure, and high poverty levels, which contribute to overcrowded classrooms. Seasonal floods, triggered by heavy rains, frequently destroy classrooms and even displace schoolchildren (Muiruri, 2023). In 2020, severe floods affected various parts of the country, including Isiolo County, where floods submerged several schools, particularly those located along the Ewaso Ng'iro River (Gichuhi, 2022). These floods destroyed classrooms and forced children out of school. Similar events occurred in the

Garsen area of Tana River County, where many primary schools were closed, and schoolchildren were displaced (Mburu, 2020).

The floods of 2018 along the Lake Victoria basin led to the closure of several primary schools, including Bunyala Primary School in Busia County (Muiruri, 2023). While many incidents of school fires have been reported in secondary schools across Kenya, a notable fire occurred in 2009 at Kianjiru Primary School in Murang'a County, which caused panic among the pupils and significant damage to school infrastructure (Wainaina, 2012). Additionally, in Nyeri County, landslides along the Aberdare Ranges in 2018 affected several schools, leading to their temporary closure due to safety concerns (Muiruri, 2023).

Tharaka South Sub-County, located in Tharaka Nithi County, Kenya, is a semi-arid region characterized by a unique combination of environmental, socio-economic, and demographic challenges that make it an ideal case for studying disaster preparedness in public primary schools. The region experiences frequent natural disasters, including recurrent droughts, seasonal flooding, and water scarcity, which disrupt educational activities and pose significant risks to schoolchildren and staff (Mirzaei et al., 2020). Additionally, human-induced challenges, such as ethnic land conflicts between the Tharaka and Meru communities, exacerbate vulnerability, often leading to violent attacks on schools, school closures, displacement of students and families, and increased absenteeism (Kaua et al., 2019). These conflicts, rooted in resource competition and historical tensions, have targeted educational institutions, creating an environment of fear and instability that undermines learning continuity (Gioto et al., 2018).

The sub-county's demographic profile, with a predominantly young population attending public day primary schools mostly aged 13 or younger, heightens the urgency of effective disaster preparedness. Schoolchildren in this age group are particularly vulnerable to the physical and psychological impacts of disasters, making schools critical spaces for building resilience. Moreover, high poverty levels and limited infrastructure in Tharaka South amplify the challenges of implementing robust

disaster preparedness strategies, as schools often lack adequate resources, trained personnel, and safety equipment (Muiruri, 2023).

Tharaka South Sub-County presented a compelling case for this study due to its heightened exposure to both natural and manmade catastrophes, which were inadequately addressed in existing primary school safety frameworks. While national policies emphasized disaster risk reduction (DRR), empirical evidence on their implementation in primary schools, particularly in disaster-prone semi-arid regions like Tharaka South, remained limited (Gichuhi, 2022). This study therefore examined the effectiveness of disaster awareness strategies in enhancing preparedness, identified specific shortcomings in current practices, and provided actionable insights for school administrators, the Ministry of Education, and local communities. By focusing on Tharaka South, the research informed tailored interventions that protected pupils and staff, strengthened institutional resilience, and served as a model for other disaster-prone regions in Kenya and beyond.

1.2 Statement of the Problem

Disasters impede schooling and inflict considerable psychological distress on students. In Tharaka South Sub-County, primary schoolchildren face compounded adversities from drought, seasonal flooding, charcoal burning, high poverty levels, and ethnic land conflict. A 2009 report by the Red Cross and Red Crescent highlighted escalating ethnic tensions from land disputes between the Tharaka and Meru communities. This violence led to injuries and fatalities, with schools becoming targets. Many children are forced to abandon their education for safety, while rival factions attack schools and social gatherings, creating widespread fear and psychological trauma. Despite policy guidelines on school safety and efforts to improve disaster preparedness, such disasters persist leading to displacement and casualties in public primary schools. While disaster preparedness is emphasized in secondary schools, little attention has been given to primary schools, with limited empirical evidence on the subject. This study therefore examined the effects of disaster awareness strategies on preparedness in the Sub-County.

1.3 Purpose of the Study

The purpose of the study was to assess the effects of disaster awareness strategies on preparedness in public primary schools in Tharaka South Sub-County, Kenya.

1.4 Objectives of the Study

- i. To establish the effect of disaster awareness training on disaster preparedness in public primary schools in Tharaka South Sub-County
- ii. To examine the availability of disaster awareness materials and its effects on disaster preparedness in public primary schools in Tharaka South Sub-County
- iii. To investigate the effect of school disaster management policies on disaster preparedness in public primary schools in Tharaka South Sub-County
- iv. To assess the effect of community participation in disaster preparedness in public primary schools in Tharaka South Sub-County

1.5 Research Hypothesis

- H₀₁ There is no statistically significant effect of disaster awareness training on disaster preparedness in public primary schools in Tharaka South Sub-County
- H₀₂ There is no statistically significant effect of disaster awareness materials on disaster preparedness in public primary schools in Tharaka South Sub-County
- H₀₃ There is no statistically significant effect of school disaster management policies on disaster preparedness in public primary schools in Tharaka South Sub-County
- H₀₄ There is no statistically significant effect of community participation in disaster preparedness in public primary schools in Tharaka South Sub-County

1.6 Significance of the Study

This study addressed the critical need for disaster preparedness in public primary schools in Tharaka South Sub-County, where floods, droughts, and ethnic conflicts threaten safety. By assessing disaster awareness training, availability of preparedness materials, school policies, and community participation, the study generated valuable insights to enhance pupil and staff safety, reduce vulnerability, and promote a culture of preparedness. These findings contribute to the broader discourse on disaster risk reduction (DRR) in education (Paci-Green et al., 2020).

In practical terms, the study provided evidence-based recommendations targeting key stakeholders and outlining actionable areas. For pupils, the findings underscored the importance of acquiring basic safety skills such as evacuation and first aid. For teachers, the study highlighted the value of regular training that strengthens crisis management and ensures learning continuity (Gichuhi, 2022). For head teachers and school administrators, it emphasized policy and procedural guidance, including clear evacuation routes, designated assembly points, and maintenance of emergency kits (Rico, 2019). For parents and guardians, the study clarified their roles in preparedness and response, reinforcing school–community partnerships (Oktari et al., 2018).

The findings have practical implications for local communities, helping build resilience through school-led education and enabling better disaster preparedness (Hoffmann & Muttarak, 2017). The Ministry of Education and Sub-County Education Offices can use the results to refine DRR policies and prioritize high-risk areas (Gichuhi, 2022). Policymakers — including officials from the Ministry of Education (Directorate of School Safety), Tharaka-Nithi County education authorities, and the National Disaster Management Authority (NDMA) — can draw on this evidence to strengthen targeted DRR frameworks that reduce educational disruptions nationwide (UNESCO, 2012).

Overall, the study’s insights provide a solid foundation for empowering stakeholders to make schools safe havens, strengthen community resilience in Tharaka South Sub-County, and advance DRR efforts to enhance preparedness for future disasters.

1.7 Scope of the Study

The study focused on public primary schools in Tharaka South Sub-County, Tharaka Nithi County, Kenya. Data was collected from head teachers, teachers, and school administrators. The study examined various types of disasters, including natural (e.g., floods, earthquakes) and human-made (e.g., fires, accidents). Tharaka South Sub-County was selected due to its vulnerability to frequent disasters, particularly the high incidence of violent attacks on primary schools and other social spaces. These attacks

are primarily driven by ethnic land disputes between the Tharaka and Meru communities (*PRESS STATEMENT 27 TH, 2024*).

1.8 Limitations of the Study

The study encountered certain limitations during data collection, particularly the reluctance of some key respondents that is teachers and school board members to provide information they considered sensitive. To address these limitations, the researcher minimized resistance by reassuring respondents that all information would remain strictly confidential and be used solely for research purposes.

1.9 Assumptions of the Study

The study assumed that participants willingly participated in providing accurate and reliable information based on their knowledge and experience of disaster preparedness in primary schools. Additionally, the study assumed that the management of the public primary schools was involved in the study complied with the MOE policy guidelines on school safety.

1.10 Operational Definitions of Terms

Administration	: Government officers including the Government of Kenya, National Government Administration, and Ministry of Education staff in the field enforcing disaster policies.
Awareness	: Degree of understanding among stakeholders regarding disaster-related issues and response strategies.
Awareness Strategies	: Methods and initiatives to enhance disaster awareness, including educational campaigns and training sessions.
Disaster Awareness	: Understanding of potential disasters, causes, risk levels, effects, and response measures among primary school stakeholders.
Disaster Preparedness	: Actions taken in advance by primary schools to effectively respond to disasters.
Disasters	: Sudden disruptive phenomena causing widespread losses that exceed their capacity to cope.
Primary Schools	: Educational establishments offering formal schooling to pupils between the ages of 6 and 17 years.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Disaster Awareness and Disaster Preparedness

According to Royagan (2019), disasters are global phenomena that affect communities and countries worldwide, arising from either natural or human-made events that lead to losses, preventable deaths, and other damages. While the approach to disaster preparedness in schools varies depending on a country's political and economic conditions, it has become a critical priority in many regions (Kitagawa, 2015). Doyle (2013) observed that emergencies are prevalent in schools, making it essential for administrators to have plans, strategies, and procedures in place to manage such situations effectively. Tipler et al. (2017) assert that ensuring the safety of children in schools has become a global priority, with school management being responsible for protecting students, who are among the most vulnerable groups during disasters. Sakurai et al. (2018) emphasized the importance of schools anticipating and preparing for a range of emergencies, both to prevent their occurrence and to mitigate their impact when they do happen.

According to How et al. (2020), schools have a responsibility to educate their populations about disasters to enhance safety and prevent potential harm and property loss. The lack of disaster awareness is a major factor contributing to inadequate preparedness, resulting in significant loss of life and property in schools (How et al., 2020). Properly trained students and school staff can mitigate risks and protect themselves and others during emergencies. Disaster preparedness is a top priority for educational and public institutions worldwide. Therefore, integrating disaster education into school curricula is essential for raising awareness among students and the communities in which they live (Tsai et al., 2020). Kangana et al. (2024) observed that many schools continue to face substantial safety challenges, including disasters, violence, and emergencies, which can lead to injuries, psychological trauma, and even fatalities. According to Sakurai et al. (2018), effective implementation and strict adherence to the safety measures and policies within school settings are crucial in significantly reducing the occurrence of such tragic events and preventing avoidable disasters. Fazeli et al. (2024) found that schools are critical platforms for raising awareness and education, cultivating a culture of developing and nurturing safety

readiness skills, and empowering students to be change agents in their communities. Training staff and students to use these safety measures is crucial in preparing skilled workers for disaster preparedness, with regular drills and simulations helping to reinforce this training and improve their preparedness outcomes (Amri, 2022).

While emphasizing the necessity of disaster education for schoolchildren, Bulut (2020) noted that the primary goal of disaster education is to provide first-hand and practical knowledge that would improve students' skills and prepare them to be ready to help prevent or minimize the impact of catastrophes before they occur. These trainings prepare the learners and staff to gain appropriate response approaches and strategies, particularly in taking necessary precautions and actions before disasters occur. In the same vein, Maya and Sari (2018) observed that various disasters tend to occur at different schools and at different times, which makes them sudden, impromptu, and unpredictable making them inevitable realities. The lack of knowledge and inadequate disaster preparedness plans in schools increase the vulnerability of schoolchildren to the risks associated with the catastrophes.

Celik (2020) found that disaster education practices are lacking in many primary schools, noting that the education is based primarily in classrooms, focused on exams, and mostly centered on theoretical knowledge. Furthermore, the scope, duration, and acquisition of the curriculum are inadequate, and the textbooks are inadequately prepared with respect to these topics (Mburu, 2012). According to Maya and Sari's (2018) study with school instructors, the disaster-related subjects, learning areas, and accomplishments in the curricula are insufficient. Adiyoso and Kanegae (2012) observed that primary school curricula and textbooks should be revised and enhanced in the context of disaster education. Additionally, a theory-based approach should be dropped in the pertinent classes and replaced with activity-based practices (Ng'ang'a, 2013). Furthermore, Celik (2020) observed that the training outcomes regarding disaster education at the primary school level were lacking and that there were ineffective curricula as well as a lack of practice-based outcomes. The study also noted insufficient course hours, which do not provide enough preparation for disaster education.

This section provides a foundational understanding of the significance of disaster awareness and preparedness, particularly through disaster education and training. This background directly supports the first objective of this study, which seeks to establish the effect of disaster awareness training on disaster preparedness in public primary schools in Tharaka South Sub-County.

2.2 Prevalence of Disaster in Public Primary Schools

Miller et al. (2022) observed that weather-related disasters affect approximately 175 million schoolchildren globally; causing devastating effects on the schoolchildren, teachers, parents, and the school community. These catastrophes result in school closure for less than five days to over two weeks depending on the factors including the level of damage to the infrastructure, casualty concerns, and policy directives.

Tipler et al. (2017) observed that approximately 62% of primary schools in New Zealand had experienced at least one disaster event between 2010 and 2020, reflecting a concerning prevalence of emergencies in schools in three years. The most common crises reported were weather-related, fires, earthquakes, deaths of staff or students during and after school hours, significant injury to personnel or children, and threats of violence. The three most prevalent serious incidents among these situations were weather-related constituting (44%), fire (33%), and earthquakes (82%). Although Tipler et al (2017) noted that secondary schools reported a considerably higher percentage of disasters (23%), compared to primary schools (7%) and other institutions, the magnitude of the impact on the learning institutions was felt less the same across the levels, with schools having to close temporarily due to these emergencies. In India, the 1995 school fire left 400 schoolchildren dead while the July 2004 fire tragedy claimed the lives of 94 pupils at a school in Kumbakonam, India; with these deaths blamed for failure to follow the safety norms, overcrowding, and inappropriate fire safety protocols in school infrastructure (Kanyi, 2014). In Russia, a terrorist attack at Beslan School between 1st and 3rd September 2004 resulted in the deaths of 186 schoolchildren, causing fear and panic among the school pupils and the communities.

Musladin and Cverlin (2020) reported a considerably high prevalence of disasters in primary schools in the United States of America. Notably, in 2005 the Hurricane made landfall in New Orleans which destroyed 100 out of the 120 primary schools with the remaining closed and learning terminated. Musladin and Cverlin (2020) paint a picture of the aftermath of the disaster revealing the sorry state of affairs in schools, and the devastating effects of the disaster on schoolchildren, staff members, stakeholders, staff, and the wider community as well. They also reviewed the government's interventions enforced to address potential future catastrophes. While the citizens of New Orleans felt abandoned by the government, Musladin and Cverlin (2020) observed that the charter schools commissioned the New Orleans school system's recovery and rebuilding initiative which was part of the government efforts toward reconstruction of schools and enforcing institutional policies aimed at promoting disaster preparedness and response for posterity.

In Uganda, the fire tragedy of 2008 at Buddo Primary School left nineteen pupils and two adults dead. Investigation into the tragedy linked the tragedy to the negligence and failed safety protocols and procedures with dormitory doors being locked from the outside at the time of the incident and the fact that classrooms had been converted into dormitories without consulting the district engineer and the health officers as required by the law (Hirano, 2009).

In Kenya, the fire tragedies that occurred in 2012 at St Teresa's Asumbi Primary School and Riruta's Le Pic Academy claimed the lives of eight pupils and five pupils respectively (Njoroge, 2014). The fire incidences in both institutions were blamed on failed fire safety procedures and protocols in the schools with dormitory doors locked from the outside and dormitory windows installed with grills (MOE, 2012). Although several disasters are not commonly reported in the Kenyan context, Gichuhi (2020) observed that there is an urgent need for primary schools in Kenya to put in place adequate disaster preparedness and response systems to avoid unforeseen disasters when they strike, given that there is little attention given to the state of disaster preparedness in public primary schools in Kenya. This study seeks to assess the prevalence of disasters in public primary schools in Tharaka South Sub-County.

2.3 Effects of Disaster Awareness Training on Disaster Preparedness

Disaster awareness training is a critical component of disaster preparedness in educational settings, equipping schoolchildren, teachers, and staff with the knowledge and skills needed to respond effectively to emergencies. According to Bulut (2020), disaster awareness training in primary schools aims to provide practical, hands-on knowledge that enhances students' ability to prevent or mitigate the impact of disasters. Such training often includes evacuation drills, first aid workshops, and lessons on identifying early warning signs, which foster a culture of readiness. In the context of public primary schools, where pupils are particularly vulnerable due to their age and dependence on adult guidance, effective training can significantly reduce risks during disasters like floods, fires, or conflicts (Fazeli et al., 2024).

Empirical studies highlight the positive effects of disaster awareness training on preparedness outcomes. Amri (2022) found that school-based training programs involving regular drills and simulations improved students' and teachers' confidence in responding to disasters, reducing panic and enhancing evacuation efficiency. In a study of tsunami-prone areas, Oktari et al. (2018) reported that schools with structured training programs, including mock drills and teacher-led workshops, demonstrated higher preparedness levels, evidenced by faster response times and better adherence to safety protocols. These findings align with the Social Learning Theory (Bandura, 1960s), which posits that pupils learn disaster response behaviors by observing and imitating teachers during training exercises. For instance, teachers demonstrating evacuation procedures or the use of emergency kits enable pupils to internalize these actions, reinforcing preparedness through practical engagement.

Training programs also contribute to preparedness within the broader school ecosystem, as described by the Ecological System Theory (Bronfenbrenner, 1990). UNESCO (2012) emphasizes that integrating disaster risk reduction (DRR) into school curricula and training teachers to deliver this content creates a ripple effect, enhancing preparedness across pupils, staff, and the surrounding community. In India, teacher training initiatives on disaster management skills significantly increased pupils' awareness and response capabilities, as teachers effectively disseminated knowledge through structured lessons and drills (Assam State Disaster Management

Authority, 2014). However, the effectiveness of training depends on its frequency, quality, and accessibility. Fazeli et al. (2024) note that sporadic or poorly designed training sessions often fail to sustain preparedness levels, particularly in resource-constrained settings.

In the Kenyan context, the implementation of disaster awareness training in primary schools remains inconsistent. Gichuhi (2022) highlights that while national policies advocate for DRR integration, many public primary schools lack regular training programs due to limited funding, untrained teachers, and competing educational priorities. In disaster-prone regions like Tharaka South Sub-County, where floods, droughts, and ethnic conflicts frequently disrupt schooling, the absence of structured training exacerbates vulnerability (Kaua et al., 2019). For example, the lack of regular evacuation drills or teacher training in conflict response leaves schools ill-equipped to protect pupils during sudden crises. Moreover, there is a paucity of empirical research examining the specific impact of training on preparedness in semi-arid, conflict-prone areas like Tharaka South, creating a critical knowledge gap that this study seeks to address.

Despite the recognized benefits of disaster awareness training, challenges persist in its implementation. Celik (2020) found that many primary school training programs are overly theoretical, lacking practical components like simulations, which limits their effectiveness. Additionally, low teacher preparedness and inadequate training materials hinder the transfer of knowledge to pupils (Kamau et al., 2011). These challenges are particularly pronounced in resource-scarce settings like Tharaka South, where schools struggle to allocate funds for training or access qualified trainers (Mburu, 2020). This study investigated how disaster awareness training influences preparedness in Tharaka South's public primary schools, exploring the frequency, quality, and accessibility of training programs and their impact on pupils' and teachers' readiness to respond to disasters.

2.4 Disaster Awareness Materials

Makhanu (2009) observed that the lack of safety departments in schools due to negligence and traditional religious beliefs has been associated with inadequate

awareness of basic safety precautions among many students in the institutions of learning. The study highlighted the need to not only have a safety department in schools but also adequately equip them with safety and emergency kits as well as tools and equipment to support pupils' education and preparation to mitigate the magnitude of the occurrence of emergencies in schools and communities.

According to White (2011), there is a need for classroom disaster plans to address emergencies such as floods, fire, and violence to be included in the systems of security and safety in schools. These emergency plans should be clearly and properly communicated to the pupils, teachers, parents, and members of the community in order to build their trust and confidence in the safe environment of the pupils. Ian (2010) noted that disaster education materials like textbooks, posters, and flyers were not considered a priority to most primary schools in India, as they were more concerned about pupils' enrolment in schools with little effort put into safety measures with the school premises. According to Shaw (2002), failure to understand the importance of safety equipment has discouraged many primary schools from investing in safety systems and education materials, that are meant to promote the institutions' safety norm. Further, inadequate funds in public primary schools limit the management in attending to the pressing needs of the institution while ignoring basic safety requirements such as disaster education materials and equipment, thereby exposing pupils and staff to the potential risks in the event of disasters.

Torrington et al (2008) emphasized the importance of using visual aids and emergency kits in training pupils on disaster preparedness in schools. They insisted that training using these education materials encourages ease of understanding and retention of safety procedures and protocols in the event of a disaster. Torrington et al (2008) observed that the use of education videos coupled with drills and simulation prepares pupils for what they need to know and helps them visualize what to do in case of emergencies. In their study, Nakitto and Lett (2012) found that most primary schools in Uganda did not have first aid tools, emergency kits, warning signs, and enough textbooks on disaster and emergency preparedness and response. These concerns prompted the Ministry of Education and management of the school to set up safety policies and plans for the provision of educational materials for purposes of

disaster awareness and preparedness. Ndiang'ui (2006) observed that emergencies including fire exposure to schools in Kenya were inclined by an administrative outline of most schools. These schools lacked first aid tools, warning signs, fire drills, and disaster preparation plans. The study highlighted the urgent need to have safety plans to mitigate any form of risk and to counter disasters.

2.5 Roles of Teachers and Management Policies

The teachers play a significant role in transferring knowledge for disaster and conflict risk reduction as well as being effective tools for fostering a resilient culture (Kimathi, 2011). The education system has a responsibility to ensure that it does not serve as a tool for dominance but that teachers absorb protective behaviors in the event of a disaster (IIEP, 2012). Barakat and Hardeman (2012) observed that training teachers on disaster response skills, particularly on the basic instructional manuals and visual aids significantly improves their dissemination of information on disaster reduction which increases pupils' understanding and improves their retention of disaster response information.

In India, teachers' capacity building in disaster management skills including mitigation measures and risk assessments was a notable, path-breaking initiative and a significant step towards improved disaster awareness and preparedness in schools. This expert training has significantly resulted in increased teachers' and pupils' knowledge, awareness, and skills in the response mechanisms followed during emergencies and disasters (Assam State Disaster Management Authority, 2014). In Lesotho, teachers played a crucial in advocating for a transformation process that saw a complete re-configuring of its curriculum from the traditional-based model to the one primarily built on skills development. This move has resulted in opening up opportunities for integration of disaster management, awareness, and preparedness into the school curriculum. Similarly, in Malawi, teachers' empowerment policy through training and skills development has been a major milestone towards the integration of disaster management and emergency preparedness into the curriculum; a move linked to substantial awareness levels of matters of disaster and disaster response among pupils (UNESCO, 2012).

Wainaina (2012) found out that most schools in Kenya lack specifically trained teachers with the requisite skills for adapting instructional materials and disseminating information on disaster risk reduction and preparedness to pupils and fellow teachers. According to Kwamboka (2013), most classroom teachers in Kenya lack confidence in disaster education, are not well prepared, and lack the requisite knowledge and abilities to respond during and after disasters. Kamau et al (2011) opined that while some classroom teachers might have sufficient knowledge about disasters, they are inadequately equipped to teach disaster-related concepts due to a lack of educational materials to support pupils learning.

2.6 Community Participation

Hoffmann and Muttarak (2017) aver that community participation in disaster preparedness initiatives cannot be overstated. There is a need to build a robust involvement among all stakeholders, including the school, parents, pupils, and the local community, in supporting disaster preparedness initiatives and a well-coordinated response to disaster. Furthermore, creating more partnerships with multinational players such as NGOs, the Red Cross and UNICEF bolsters local efforts and provides expert knowledge, skills, and resources for effective disaster preparedness and response (Islam et al., 2022).

Atkinson and Fowler (2023) observed that the safety of schools and pupils is not only provided by the walls and fences but also by the community as a whole. Besides, Atkinson and Fowler (2023) note that successful school safety programmes need to integrate pupils learning with community emergency preparedness training, involving learning extensions at home as well as encouraging teacher-parent communication and child-parent communication. This encourages pupils to participate in disaster awareness and preparedness efforts preparing them to respond appropriately in the event of a disaster. While emphasizing the need for students' participation in disaster preparedness, Ian (2010) noted that engaging pupils in setting risk management practices goes a long way in dispensing the guidelines focused on school safety measures and protocols. This creates a training forum on various disaster response approaches and behavior, emergency procedures, and appropriate use of protective gear (Ian, 2010).

In the Philippines, schools are considered strategic institutions and crucial centers for disaster risk reduction for both the school fraternity and the community (Njogu, 2014). The center for Disaster Preparedness emphasizes that schools serve as spaces for engagement in promoting efforts geared toward community development. In Bangladesh, disaster risk reduction initiatives and plans recognize students' involvement particularly in community-level consultation and participation, which take place in schools and other public institutions (Njogu, 2014).

In Rwanda, Njue (2013) noted that increasing and building partnerships between schools, families, children, and the community helps to produce a critical dimension of safe schools. The students should be involved throughout the decision-making process. Safe schools have an ordered, purposeful environment free of physical, psychological, or emotional harm. These schools develop partnerships with the community, and students are given opportunities to play major roles in the school's safety preparedness efforts. This participation fosters trust and open communication with the community, hence supporting the school's safety plans and mission (Njue, 2013). In Uganda, following the 2008 fire tragedy that claimed the lives of nineteen girls and two adults at Buddo primary school, the government implemented key interventions including the Safe School Contact aimed at encouraging pupils' participation in fire safety as well as strengthening the role of teachers, pupils and parents in disaster management and their risk reduction (Hirano, 2009).

In Kenya, pupils' participation in school affairs is limited, with the members of the community involved in raising school funds, attending meetings convened by teachers, or limited membership in the management board. To enhance safety systems in schools, there is a need for comprehensive involvement programmes to address safety challenges faced by the education sector (Nyakundi, 2012). Creating safe and secure schools is about commitment and community will. No school safety strategies can succeed without students' participation. By adopting a comprehensive approach to addressing school safety focussing on prevention, intervention and response, schools can increase the safety and security of children (Atkinson & Fowler, 2023).

2.7 Summary of Literature Review and Knowledge Gaps

In Kenya, disasters in schools are major public safety concerns needing urgent and effective intervention. The reviewed literature revealed that despite the government's efforts to enhance safety measures in learning institutions, most of the public primary schools in Kenya lack a safety system, with limited awareness of disasters and disaster preparedness among pupils, teachers, and the wider community. The literature also highlighted that insufficient funding; poor community participation, complacency, and the lack of prioritization of needs in school management contribute to inadequate disaster awareness strategies and preparedness in public schools in Kenya.

While reviewing the literature, the researcher identified several gaps in existing studies. Studies on school safety have been conducted in other counties like Kilifi (Njoroge, 2014), Nyeri (Ng'ang'a, 2013) and Kisii (Nyakundi, 2012). In Kiambu County, such studies have been conducted in other divisions like Kikuyu (Wainaina, 2012), Githunguri (Kimathi, 2011), and Limuru (Mburu, 2012). These studies ignore primary schools. Heavy loss of life and property in public primary schools has persisted in parts of the country. This points a low level of compliance with disaster preparedness guidelines in schools in Kenya. The media continue to report the occurrence of disasters and the devastating impacts of these disasters on schools, particularly in disaster-prone regions including Tharaka South Sub-County. This raised the researcher's interest in finding out whether disaster awareness strategies have been implemented and the state of disaster preparedness in public primary schools in disaster-prone regions. Most studies have focused on gaps in the training of stakeholders in fire disaster preparedness in secondary schools. Very few studies have focused on the aspects of school's disaster awareness programs and disaster preparedness, despite concerns for the safety of pupils in primary schools. The study intended to fill the gaps by investigating the effects of disaster awareness strategies on disaster preparedness in public primary schools in Tharaka Sub-County.

2.8 Theoretical Framework

Theories are developed to explain a range of events and difficult circumstances, as well as to further knowledge of the facts and presumptions surrounding important

problems that have an impact on people. The Social Learning Theory and Ecological System Theory which are connected to the study variables was the main theories of this investigation.

2.8.1 Social Learning Theory

The study is based on Social Learning Theory developed by Albert Bandura in the early 1960s. The theory focuses on the context of comprehending how individuals learn behavior and how it affects their actions in society. It emphasizes that behaviors, emotional reactions, and attitudes are learned by imitating and observing others. In a school setting, pupils tend to learn behaviors by imitating or observing their peers and those they interact with in their environment. The theory further notes that many behaviors are learnt from people that pupils regularly interact with in their common and frequent spaces. Teachers are expected to demonstrate leadership and higher moral standing in school and their communities, given that pupils consider them as role models and look up to them for guidance. Based on the theory, disaster awareness actions including the use of emergency kits, evacuation drills, and other safety measures can be demonstrated by teachers appropriately and effectively in schools. By demonstrating the use of the safety tools and equipment, pupils are more likely to learn better how to use them in emergency situations.

According to this theory, social interaction in schools provides platforms for learning diverse behavior, and knowledge, sharing ideas and experiences as well as creating memorable events in peer groups. Disaster awareness strategies among the pupils can be encouraged by leveraging on peer groups to develop disaster preparedness projects to promote practical learning of emergency response behaviors. Furthermore, older pupils can be encouraged to mentor the younger ones in peer groups as well as create platforms for pupils to gather in active group learning where they can share knowledge, ideas and experiences regarding disaster awareness strategies.

In the context of Tharaka South Sub-County, where ethnic clashes, floods, and drought are prevalent, this theory is very relevant. It highlights how a teacher in public primary schools can demonstrate the process of creating a simple disaster kit and then allow pupils to make similar kits in groups, thereby reinforcing their learning

through practical engagement. However, this theory is limited in that it explains how disaster awareness actions can be learned by pupils in a primary school setting but fails to address disaster preparedness specifically in the context of public primary schools in disaster-prone regions such as Tharaka South Sub-County. To address this gap, the study reviewed the ecological systems theory.

2.8.2 Ecological System Theory

The study is also based on the Ecological System Theory proposed by Urie Bronfenbrenner in 1990. The theory views disaster preparedness as a holistic approach employed by pupils, teachers, schools, and communities collectively and effectively in order to prepare and respond appropriately to emergencies.

The theory accounts for disaster preparedness and response within the context of the system of relationships that form the environment, each layer of relationship affecting how the disaster preparedness is approached and executed (Berk, 2000). Changes or conflicts on any one layer will ripple throughout other layers. To study disaster preparedness strategies, one must not only look at disaster awareness strategies and their immediate environment, as they also interact with the larger environment. According to the theory, the direct bi-directional relationships and interaction of these factors with their surroundings have the strongest influence on preparedness and response. However, the strategies do not function directly with the larger social system, although they impact the preparedness by interacting with some structures with which the factors interact. Disaster preparedness efforts are part of a community-wide effort, occurring at different levels of the community, and aimed at enhancing school safety.

The theory defines how various factors interact to influence a school's preparedness behavior, emergency risks, and overall resilience, particularly in the face of catastrophes like floods, droughts, and violent attacks in disaster-prone regions like Tharaka South Sub-County. The theory stresses the interplay between schools' disaster preparedness strategies, the immediate environment, and the community environment, by providing a holistic approach to understanding how they can collectively prepare and respond to emergencies. Effective disaster awareness

strategies can be understood within the context of a complex system of relationships between environmental factors that influence the level of disaster preparedness in schools. Pupils' direct engagement with disaster preparedness strategies in school contributes to the development of pupils' emergency response skills. For example, teachers conducting regular drills and providing classroom materials, such as textbooks, posters, and emergency kits, contribute to pupils' understanding of safety procedures and actions to be taken in the event of an emergency. Bronfenbrenner's ecological system theory is suitable for examining the interaction between the prevalence of disaster occurrence, education materials, the role of teachers, and the level of students' participation as they affect disaster preparedness in public primary schools in a disaster-prone region such as Tharaka South Sub-County.

2.9 Conceptual Framework

A conceptual framework is a pictorial illustration that helps the researcher better understand and become aware of the relationship between variables under investigation (Mugenda & Mugenda, 2013). It summarizes and organizes ideas into a comprehensible format. The conceptual framework is presented in Figure 1:

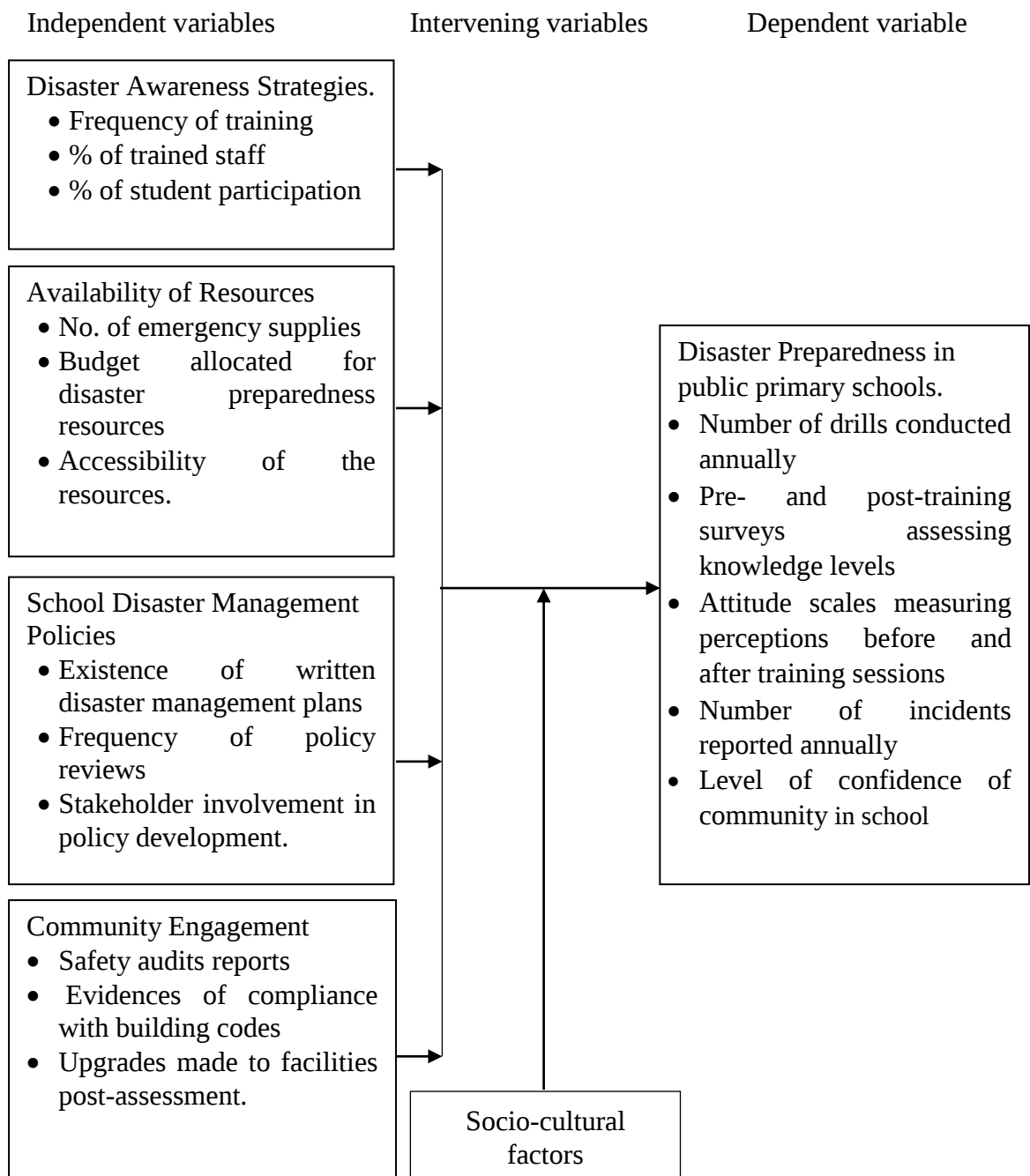


Figure 1: Conceptual Framework

The framework (Figure 1) considered variables that are of great effect to disaster preparedness in primary schools, which are disaster awareness training, availability of resources, school disaster management policies and community engagement, which form the independent variables. The disaster preparedness in this study were number of drills conducted annually, pre- and post-training surveys assessing knowledge levels, attitude scales measuring perceptions before and after training sessions, number of incidences reported annually and level of confidence of community in school. The output is influenced by how the inputs interact with socio-cultural factors.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Location of the Study

The study was conducted in Tharaka South Sub-County, one of the six sub-counties of Tharaka-Nithi County, located in the eastern region of Kenya. It lay approximately 200 to 250 kilometers from Nairobi and covered an area of 1,239.4 km². The geographical coordinates were approximately latitude 0.55° S and longitude 37.65° E. Tharaka South was predominantly a rural and semi-arid region, with an average annual rainfall ranging from 600 mm to 1,200 mm and average annual temperatures between 20°C and 30°C. The sub-county had an estimated population of 150,000 to 170,000 people, primarily from the Tharaka and Meru ethnic communities.

At the time of the study, the Sub-County was home to 45-day primary schools, with a total of 574 teachers and a pupil population of 8,825 the majority aged thirteen or younger, making them particularly vulnerable to the frequent disasters that occurred in the region. The region also faced significant challenges, including ethnic tensions over land, which contributed to instability and disruptions in local schools. Additionally, Tharaka South was highly vulnerable to recurring disasters, such as violent ethnic conflicts and natural calamities, which further exacerbated disruptions in educational activities (Tharaka South Sub-County Education Office, 2025).

3.2 Research Design

Research design, according to Kothari's (2017) assertion is the strategy that the study uses to solve the research problem. This study utilized descriptive survey design to obtain both qualitative and quantitative data that was used to describe disaster awareness strategies employed and their state of disaster preparedness in public primary schools in Tharaka South Sub-County. The design is used when the researcher wants to find out more about the present status of the phenomenon in connection to certain variables or elements in a setting. Information about how disaster awareness initiatives help public primary schools in the Sub-County prepare for disasters might be gathered, categorised, compared, and interpreted using this method.

3.3 Target Population

The target population for this study comprised key education stakeholders in public day primary schools within Tharaka South Sub-County. Specifically, the study focused on classroom teachers, head teachers, Sub-County Education Officers, and members of School Boards of Management (BOM). These groups were selected because they play central roles in implementing disaster preparedness measures at the school level, shaping institutional responses, and ensuring the safety of pupils and staff during emergencies.

According to official records from the Office of the Sub-County Director of Education, Tharaka South, the sub-county has a total of 45 public day primary schools distributed across three education zones: Kamanyaki, Chiakariga, and Tunyai. These schools collectively employ approximately 574 teachers. This information was obtained directly from the Sub-County Director of Education, Tharaka South (personal communication, May 2024). The inclusion of these groups as the study's target population was strategic, as they possess firsthand knowledge, practical experience, and institutional perspectives on disaster awareness, preparedness activities, and existing response structures within primary schools.

3.4 Sample and Sampling Technique

The sample for this study was drawn from the target population in order to obtain a representative subset from which valid conclusions could be made about disaster preparedness in public day primary schools in Tharaka South Sub-County. According to Adi (2019), a study sample consists of a smaller set of elements systematically selected from a larger population using an appropriate selection procedure.

To enhance representativeness and reduce sampling bias, a stratified random sampling technique was employed for teacher respondents. The three education zones in Tharaka South Sub-County—Kamanyaki, Chiakariga, and Tunyai were used as strata. This was done to ensure that all geographic zones contributed proportionally to the sample.

The sampling process followed a three-step procedure:

Stratification: The total population of 574 teachers in 45 public primary schools was grouped according to the three education zones, namely Kamanyaki (118 teachers), Chiakariga (187), and Tunyai (269), as obtained from the Sub-County Director of Education (personal communication, May 2024).

Proportional Allocation: A sample size of 30% ($n = 173$) was selected from the total population, based on Cooper and Schindler's (2011) recommendation that a 30% sample is adequate for generalization in social science research. Each stratum contributed to the sample in proportion to its population size: Kamanyaki (36), Chiakariga (56), and Tunyai (81).

Random Selection: Within each stratum, teacher respondents were selected using simple random sampling through the lottery method/random number generator. This ensured that each teacher had an equal chance of selection and minimized selection bias.

In addition to the teacher respondents, purposive sampling was used to select participants who hold key roles in disaster preparedness and policy implementation. This included five head teachers, one Sub-County Education Officer, and three members of Boards of Management (BoM). Purposive sampling was appropriate for this group because they possess specialized knowledge and experience relevant to disaster preparedness within schools (Mugenda & Mugenda, 2013).

This combined sampling strategy involving stratified random sampling for teachers and purposive sampling for key informants ensured balanced representation of different zones while capturing critical perspectives from institutional leaders. This approach strengthened the credibility and depth of the study's findings.

Table 1: Determination of sample size

	Education zones	Population	Sample size
1	Kamanyaki zone	118	36
2	Chiakariga zone	187	56
3	Tunyai zone	269	81
	Total	574	173

Source: Tharaka South Sub-County Education Office, (2025)

3.5 Data Collection Methods

This study utilized primary data collected directly from respondents in the field. As defined by Mugenda and Mugenda (2013), primary data refers to first-hand information gathered by the researcher for a specific research objective. According to Kothari (2017), data collection procedures involve the systematic use of tools and protocols to obtain relevant information from a defined sample. To comprehensively address the study objectives, the researcher employed semi-structured questionnaires and interviews, incorporating both structured closed ended and open-ended items. These instruments were chosen to capture both quantitative data, such as demographic characteristics and frequency-based responses, and qualitative data, such as personal experiences, perceptions, and contextual insights. The semi-structured format allows for flexibility in probing deeper into key issues while maintaining consistency across participants.

3.5.1 Semi-structured Questionnaires

Semi-structured questionnaires were the principal tool for collecting data from the 173 teachers selected through stratified sampling. These questionnaires included both closed-ended questions for quantitative analysis (e.g., Likert-scale responses on availability and use of disaster awareness materials) and open-ended questions to allow respondents to elaborate on their experiences and opinions.

The questionnaires were self-administered, and where necessary, the researcher assisted respondents to ensure understanding. This tool was selected for its efficiency in collecting data from a relatively large sample and its ability to generate standardized responses suitable for statistical analysis (Marshall & Rossman, 2014).

To enhance content validity, the questionnaires were developed based on the study objectives and reviewed by experts in disaster risk reduction and education. A pilot test was conducted in a neighbouring sub-county to assess clarity, reliability, and relevance, with adjustments made based on feedback.

3.5.2 In-depth Interviews

To complement the data collected through questionnaires, in-depth interviews were conducted with 5 purposively selected head teachers from different schools. These individuals are considered key informants due to their leadership role in school disaster preparedness initiatives and familiarity with internal school policies and available disaster awareness resources.

A semi-structured interview guide was used to steer the discussion while allowing flexibility to probe further into relevant topics. Interviews were audio-recorded (with consent) and later transcribed for thematic analysis. The interviews uncovered deeper insights into the actual implementation and challenges surrounding the availability and effectiveness of disaster awareness materials in schools.

3.5.3 Key Informants

Further qualitative data was obtained from four key informants, namely the Sub-County Education Officer and three members of School Boards of Management (BoM), also selected purposively. These individuals are well-positioned to provide strategic insights on school-level disaster policies, government support, and the distribution and use of disaster awareness materials in the public education system. Interview sessions were guided by a structured interview schedule developed in line with the study's second and third objectives. This ensured consistency while allowing for contextual elaboration.

3.6 Pilot Testing of Research Instruments

Pilot testing was conducted to validate the research instruments questionnaires for teachers and interview guides for head teachers and key informants ensuring clarity, reliability, and relevance for assessing disaster awareness strategies in Tharaka South Sub-County's 45 public primary schools. The pilot study was carried out in Evurori Sub-County, Embu County, Kenya, a neighboring region to Tharaka-Nithi County, selected for its similar climatic, economic, and social conditions.

Evurori Sub-County experiences a semi-arid climate with seasonal floods and droughts, mirroring Tharaka South's disaster risks, which ensured that the instruments

captured context-specific preparedness challenges (Kaua et al., 2019). Its economy, driven by subsistence agriculture, and social structure, characterized by rural community-based schools, aligned closely with Tharaka South, which guaranteed that pilot responses reflected the main study's target population. Evurori's proximity also facilitated cost-effective and timely testing, enhancing feasibility within the study's timeline.

A sample of 18 teachers, representing 10% of the main study's 173-teacher sample, participated in the pilot, conducted in June 2025. Teachers were purposively selected from public primary schools in Evurori to match the main study's respondent profile. Questionnaires were administered to assess question clarity, response consistency, and cultural appropriateness, while a trial interview with a school administrator tested the guide's depth and focus. Feedback informed revisions to ensure the instruments accurately measured training, materials, policies, and community participation before data collection in Tharaka South.

3.6.1 Instrument Validity

To ensure that the data collection instruments accurately captured the intended information, the researcher focused on enhancing their validity through careful design and expert review. Instrument validity refers to the degree to which a tool measures what it is intended to measure. In this study, the questionnaires were carefully developed and refined to reflect the study objectives and research questions. The wording of the questions was reviewed to ensure clarity, relevance, and logical flow, and the structure was maintained to minimize response bias. The validity process considered the three main types of validity: content, construct, and criterion validity. To strengthen content validity, the instruments were reviewed by subject matter experts to confirm that all key areas of the study were adequately covered. Their feedback was used to make appropriate adjustments to the items and structure of the questionnaire. This process helped ensure that the tool was both comprehensive and aligned with the study objectives.

3.6.2 Instrument Reliability

Instrument reliability refers to the consistency of results when the same tool is applied under similar conditions over time. In this study, the reliability of the questionnaire was assessed using Cronbach's alpha, a statistical measure commonly used to determine the internal consistency of research instruments. A pilot test was conducted, after which Cronbach's alpha was computed to evaluate whether the tool produced stable and dependable responses. The results yielded a reliability coefficient of 0.7, which is generally accepted as the minimum threshold for reliability in social science research. This indicated that the instrument was sufficiently reliable for data collection. To further enhance response consistency, the researcher ensured that all questions were clear, simple, and logically structured, minimizing ambiguity and misinterpretation by respondents.

3.7 Data Collection Procedure

The researcher obtained an Introductory letter from Chuka University post graduate studies, Ethics letter from Chuka University Ethical Review Committee and a research permit from National Commission for Science Technology and Innovation (NACOSTI). The intention to carry out research was communicated to all the respondents before collecting data. The researcher then recruited three research assistants with representation from each of the three education zones. They were trained and inducted on the research questionnaire and guided on how to conduct interviews, briefed on the study objectives, guided on the data collecting process, and on how to administer the study tools. A pilot study was carried out to assess the reliability of the questionnaire and make any necessary adjustments before the main data collection. With the support of trained research assistants, the researcher distributed the semi-structured questionnaires to a small group of teachers using the drop-and-pick approach to allow respondents sufficient time to complete them. Ethical considerations were carefully observed throughout the process to ensure transparency, voluntary participation, and informed consent. This helped build trust with participants, improved the response rate, and strengthened the overall quality of the data collection process.

3.8 Data Analysis

The purpose of the data analysis was to produce clear and meaningful findings that directly responded to the research objectives and questions. A mixed-methods approach was adopted, allowing the integration of both numerical and descriptive data. Quantitative data were analyzed using relevant statistical techniques to examine patterns and relationships among variables, while qualitative data were explored through thematic analysis to uncover deeper insights into participants' views, experiences, and perceptions. This combination provided a more comprehensive understanding of the study topic.

3.8.1 Quantitative Data Analysis

Quantitative data were derived from responses to the closed-ended questions in the semi-structured questionnaires completed by teachers. The raw data were first reviewed to check for completeness and consistency, after which they were cleaned to remove errors and incomplete entries. The cleaned data were then coded and entered into Microsoft Excel and SPSS Version 25 for analysis.

Microsoft Excel was primarily used for initial data entry, data organization, and error checking. It was also used to generate basic summaries such as totals and preliminary frequency distributions to verify the accuracy of the data before formal statistical analysis. SPSS (Statistical Package for the Social Sciences) Version 25 was used for the main quantitative analysis. The coded data were imported into SPSS, where descriptive statistics such as frequencies, percentages, means, and standard deviations were computed to summarize the distribution of responses across different variables. Cross-tabulations were performed to examine relationships between key variables such as disaster awareness training and levels of preparedness. Correlation analysis was also conducted to assess the strength and direction of the relationships between disaster preparedness and the four independent variables: disaster awareness training, availability of preparedness materials, school disaster management policies, and community participation.

To test the hypotheses and determine the relationships between the independent variables (e.g., disaster awareness training, availability of disaster awareness

materials, school disaster management policies, community participation) and the dependent variable (disaster preparedness), inferential statistics was employed. Specifically:

- i. Pearson's Correlation Coefficient was used to examine the strength and direction of the relationship between continuous variables.
- ii. Linear Regression Analysis may be conducted to assess the predictive value of each independent variable on disaster preparedness.

Before conducting these tests, the following assumptions was checked:

- i. Normality of data distribution
- ii. Linearity of relationships
- iii. Homoscedasticity (equal variances)
- iv. Absence of multicollinearity (for regression)

A significance level of 0.05 ($p \leq 0.05$) was used to determine statistical significance. Scatterplots and correlation matrices was also generated to provide a visual representation of variable relationships.

3.8.2 Qualitative Data Analysis

Qualitative data was obtained from open-ended responses in the questionnaires and interview transcripts from head teachers and key informants. This data was analyzed using thematic analysis, guided by Braun and Clarke's (2006) six-step approach:

- i. Familiarization with data
- ii. Generating initial codes
- iii. Searching for themes
- iv. Reviewing themes
- v. Defining and naming themes
- vi. Producing the report

Themes were organized around the key study objectives, such as the availability of disaster awareness materials and their perceived impact on school preparedness. The analysis incorporated verbatim quotes where necessary to illustrate participants' perspectives and support interpretation.

3.8.3 Presentation of Results

The results from quantitative analysis were presented using tables, graphs, and charts for easy interpretation. Qualitative findings were presented in narrative form, with themes discussed in relation to the literature reviewed in Chapter Two. Both types of results were triangulated where applicable to enhance the validity and richness of the findings.

Table 2: Data Analysis Matrix

Research Hypothesis	Statistical Analysis Method
There is no statistically significant effect of disaster awareness training on disaster preparedness in public primary schools in Tharaka South Sub-County	Pearson's correlation coefficient Multiple Regression Analysis
There is no statistically significant effect of disaster awareness materials on disaster preparedness in public primary schools in Tharaka South Sub-County	Pearson's correlation coefficient Multiple Regression Analysis
There is no statistically significant effect of school disaster management policies on disaster preparedness in public primary schools in Tharaka South Sub-County	Pearson's correlation coefficient Multiple Regression Analysis
There is no statistically significant effect of community participation in disaster preparedness in public primary schools in Tharaka South Sub-County	Pearson's correlation coefficient Multiple Regression Analysis

3.9 Ethical Considerations

Ethical principles guided every stage of this research to ensure the protection and dignity of all participants. Before data collection began, respondents were fully informed about the purpose of the study and their voluntary participation was sought through informed consent. No participant was coerced or placed under any form of pressure to take part in the study. Whenever a question was unclear, the researcher or research assistants provided clarification to ensure respondents understood what was being asked. Confidentiality and privacy were strictly maintained, and all information collected was used solely for academic purposes. To further enhance the ethical integrity of the study, the researcher obtained a research permit from the National Commission for Science, Innovation and Technology (NACOSTI) and an official introductory letter from Chuka University, which were presented during data

collection. These measures ensured compliance with established research ethics and regulatory requirements.

CHAPTER THREE

RESULTS AND DISCUSSION

4.1 Demographic Characteristics of the Respondents

4.1.1: Gender Distribution

The analysis of gender distribution among the respondents indicates that a majority were female, accounting for 77% ($n = 134$) of the sample, while male respondents comprised 23% ($n = 39$).

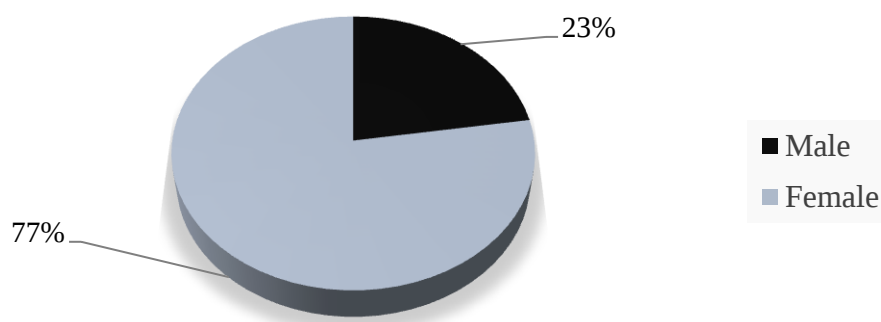


Figure 2: Gender Distribution.

4.1.2: Age Distribution

The age distribution of respondents shows that the majority (57%, $n = 99$) were between 41 and 50 years. This was followed by 32% ($n = 55$) in the 31 to 40 years age group, while 11% ($n = 19$) were below 30 years. Notably, no respondents were aged 51 years and above. These findings suggest that the participant population is largely composed of individuals in their middle adulthood.

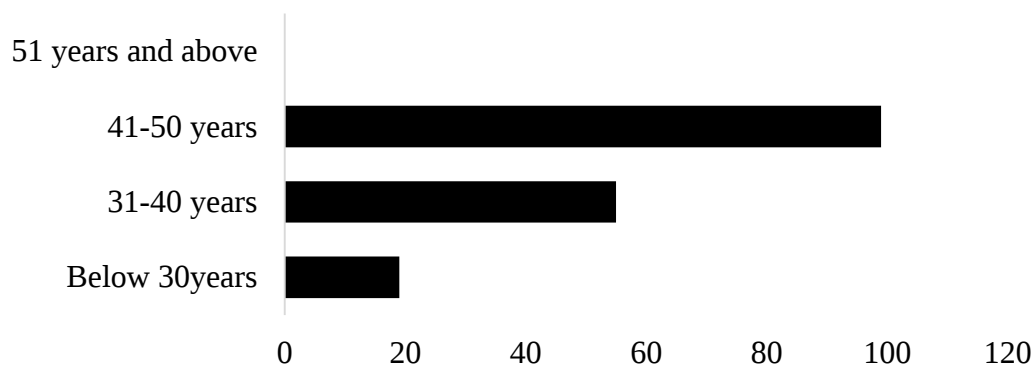


Figure 3: Age Distribution.

4.1.3 Level of Education

Slightly less than two-thirds (64%) of the respondents had a diploma as their highest level of education. Graduate and postgraduate qualifications were reported by 18% and 11% of the respondents respectively, while 7% indicated attaining a certificate, as shown Figure 4.

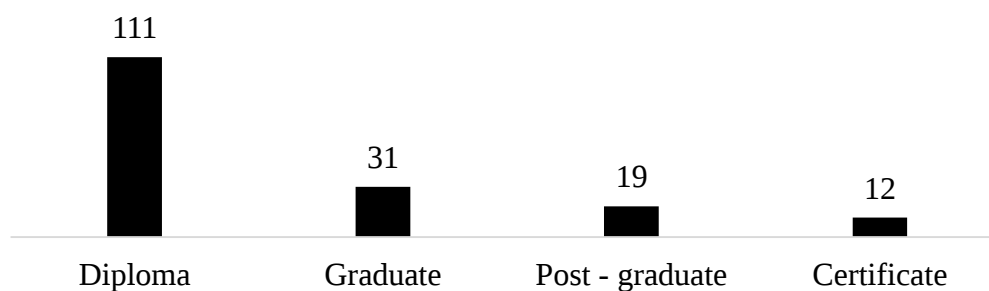


Figure 4: Education Levels Distribution.

4.1.4 Years of Experience Working in Public Primary School in Tharaka Nithi County.

Slightly over one-third (34%) of the respondents had between 10 to 15 years of experience working in public primary schools in Tharaka Nithi County. Those with less than 5 years of experience accounted for 32%, while 18% had served for over 15 years. The remaining 17% reported having between 5 to 10 years of experience, as indicated in Table 3 below.

Table 3: Years of work experience

Years of experience working in public primary school in Tharaka Nithi County	Number	Percentage
--	--------	------------

Less than 5 years	55	32%
5 - 10 years	29	17%
10 - 15 years	58	34%
Over 15 years	31	18%

4.2 Effect of Disaster Awareness Training in Disaster Preparedness in Public Primary Schools

This segment investigates the association between training in disaster awareness and preparedness of staff in primary schools in the country. Training is important as it equips the teachers and school personnel with the required knowledge and skills to enable them respond accordingly in case of a disaster, consequently making it an essential part of school safety. The study identifies the effect of the frequency of training sessions on confidence in disaster preparedness using descriptive statistics and regression analysis. Qualitative interview insights are also used in this analysis to provide context on the findings and pointers on underlying issues related to training delivery.

4.2.1: Disaster Awareness Training

A majority of respondents (79%) reported that they had not received any disaster awareness training since joining their current school, while only 21% indicated that they had undergone such training, as presented in Figure 5.

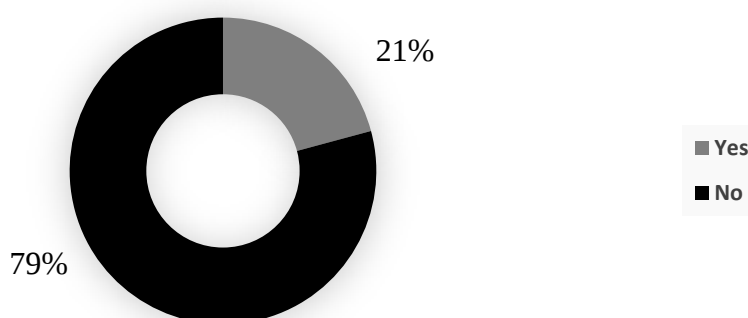


Figure 5: Disaster Awareness Training.

Among those who had received disaster awareness training, the majority (61.1%) reported having been trained 4 to 6 times, while 38.9% had received training 1 to 3 times. The Ministry of Education was the most commonly cited training provider, followed by the Red Cross. This indicates a strong role by government institutions in

facilitating disaster preparedness at the school level, supplemented by humanitarian organizations.

Table 4: Training frequency

Training Frequency	Count
1 - 3 times	17
4-6 times	19
7-9 times	0
More than ten times	0

Table 5: Organizations Offering Training

Organization	Frequency
Ministry of Education	21
Red Cross	15

4.2.2 Disaster Training Awareness

A significant proportion of respondents (42%) rated themselves as aware of disaster preparedness training in public day primary schools. However, 46% were either unaware (24%) or very unaware (22%), and 12% were neutral. Notably, none rated themselves as very aware, as shown in figure 6 below.

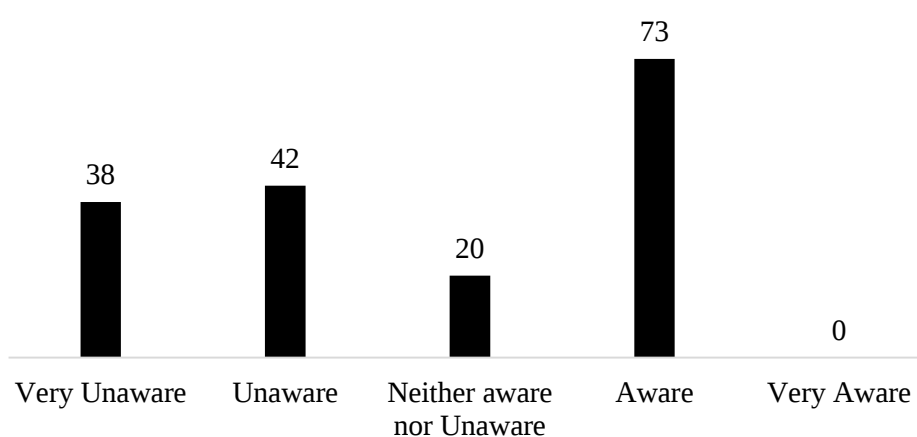


Figure 6: Awareness Rating of the Disaster Training for Disaster Preparedness

4.2.3 Percentage of the Trained Staff on Disaster Preparedness in this School

An overwhelming majority of respondents (90%) indicated that only a few staff members (1–25%) in their schools had been trained on disaster preparedness. A

smaller portion (10%) reported that some staff (26–50%) had received training, while none indicated that most or all staff were trained, as presented in Table 6.

Table 6: Percentage of Trained Staff in School

Percentage of the trained staff on disaster preparedness in this school.	Count	Percentage
A few (1-25) %	156	90%
Some (26-50) %	17	10%
Most (51-75) %	0	0%
All (76 - 100) %	0	0%

4.2.4 Percentage of the Trained Pupils on Disaster Preparedness in this School

The majority of respondents (79%) reported that only a few pupils (1–25%) in their schools had received training on disaster preparedness. An additional 21% indicated that some pupils (26–50%) had been trained. No respondents reported that most or all pupils were trained, as shown in Table 7.

Table 7: Percentage of Trained Pupils

Percentage of the trained pupils on disaster preparedness in this school.	Count	Percentage
A few (1-25) %	137	79%
Some (26-50) %	36	21%
Most (51-75) %	0	0%
All (76 - 100) %	0	0%

This lack of training is echoed in qualitative interviews. The headteacher Ubarini Primary School emphasized, “We have very little information from relevant authorities,” highlighting gaps in communication. Additionally, he noted, “Inadequate training and budget constraints remain key barriers,” reinforcing the idea that limited staff training directly affects preparedness efforts in schools.

4.2.5: Gaps Identified in Training on Disaster Awareness and Preparedness.

The Table 8 summarizes the findings and explanations discovered from the survey.

Table 8: Gaps in Disaster Awareness Preparedness.

Finding	Explanation
Lack of Training	Many respondents reported that no disaster training has been conducted, and there has been no follow-up on prior training.
Low Numbers of Trained Personnel	There are few trained staff and low numbers of trained teachers specifically to handle disasters in schools.
Lack of Disaster Awareness Education	A significant gap exists in disaster awareness education for both teachers and students.
Lack of Knowledge on Disaster Management	Many respondents highlighted a lack of knowledge on disaster management, which affects the ability to respond effectively in emergencies.
Inadequate Training	Training is often inadequate, with limited coverage and insufficient resources to address disaster preparedness needs.
Financial Constraints	Financial problems are frequently cited as a barrier to providing adequate disaster preparedness training.
Training Providers and Tools	There is a need for more personnel, tools, and resources to effectively deliver disaster preparedness training.

4.2.6 Regression Analysis of Training Frequency and Confidence in Disaster Preparedness.

Table 9: Regression Analysis of Training Frequency and Confidence in Disaster Preparedness

Metric	Value
R-squared	1
Coefficient (β)	0.333
P-value	0
Intercept (Constant)	1.333
Number of Observations (n)	35

The linear regression analysis was employed in a simple study to understand the impact of disaster training frequency on disaster preparedness confidence levels among the cadres working in the primary schools in the people. As the results of the

analysis have shown in table 9, there is a statistically significant positive correlation between the frequency of training and preparedness confidence, ($b = 0.333$, $p < 0.001$). The regression averaged 100% of the variance of the confidence score ($R^2 = 100.000$), showing an exceedingly strong predictive correlation.

In particular, the results can indicate that every one-unit increase in the training score (e.g., a transition between "1-3 times" and "4-6 times") did lead to the increase in the confidence score of about 0.33 points. These results significantly favor the hypothesis that the more often the disaster awareness training is given, the higher is the confidence stakeholders give about the preparedness services in schools.

These results concur with those of previous studies and emphasize the need of frequent and regular disaster training to build the confidence of school staff and students. As an example, Okoli et al. (2024) highlighted the importance of school-based training on a regular basis as one of the major determiners of individuals' disaster response preparation. Their research initiated that the more often the training took place, the more sure teachers were regarding the way how they might handle the situation in case of nation-wide disaster, which had a direct influence on their preparation activities. This is consistent with the results of the current study, according to which the more people undergo training, the higher their confidence in their disaster preparedness.

Additionally, the results of this study resonate with an earlier study conducted by Fazeli et al. (2024) who stated that formal training with activities that are concrete and practiced through mock drills and simulations contributes to an increase in confidence in the preparedness among school personnel. Equally, Bulut (2020) argued that the feasibility of training in disaster awareness through repetitiveness and consistency enhances readiness and awareness amongst the school personnel a finding that was reflected in the positive correlation between preparedness confidence and the training frequency in this study.

Nevertheless, a noteworthy distinction can be seen in comparison with Gichuhi (2022), who concluded that, although training does have its significance, training in

Kenya primary schools is often sporadic and rarely ever, which tends to result in low levels of preparedness confidence. The study by Gichuhi revealed that the absence of frequency in drills and uneven training compromised the confidence and preparedness of the staff, especially in resource-poor schools. This difference can be explained by the fact that the Disaster awareness programs to Tharaka South Sub-County seem to be more streamlined in terms of the frequency of the training as the study findings indicate. Thus, the outcome of this research which findings indicate that frequent training leads to a dramatic increase in confidence is a Cinderella story against the studies published so far that report the inconsistencies of training practices.

The results also support the hypothesis of this study; namely, higher disaster training frequencies lead to superior disaster preparedness outcomes as measured by confidence in disaster preparedness among teachers, head teachers, and school administrators. This observation agrees with the theoretical premises behind the Social Learning Theory (Bandura, 1960), which postulates that humans learn behaviors and confidence by observing and repeated practice. Within the scope of preparedness measures, exposure to training programs (readiness) enables stakeholders at school to develop and integrate disaster management behavior to further develop their confidence in managing disaster scenarios.

4.3 Availability of Disaster Awareness Materials/Resources and Its Effects on Disaster Preparedness

This section addresses how far access to disaster awareness materials and resources affects disaster preparedness in the public primary schools. Relevant materials Open and accessible to developing awareness and readiness among staff and students include emergency supply kits, instructional posters and preparedness guides. The discussion consists of descriptive analysis of the perceived adequacy, accessibility, and awareness of such resources and a regression analysis that shows the statistical impact of such resources regarding preparedness confidence. Qualitative insights are incorporated in order to illuminate the systemic gaps and problems that are reported by school personalities.

4.3.1 Disaster Management Materials/Resources

The majority of respondents reported no resources received, with 59% reporting “None” and 21% indicating they had not yet received any materials. A small number of respondents 13% reported receiving a few textbooks, while others 7% indicated they were unaware of any resources provided. The table below summarizes the responses:

Table 10: Disaster Management Materials

Disaster Management Materials	Count	Percentage
None	48	59%
Not yet received	16	21%
A few textbooks	10	13%
Unaware	7	7%

The results from table 10 indicate that the majority of respondents (59%) reported having no disaster management materials in their schools, highlighting a significant resource gap. An additional 21% stated they had not yet received such materials, suggesting that distribution efforts are either slow or incomplete. Only a small proportion (13%) reported having a few textbooks, while 7% were unaware of the availability of any materials, reflecting possible gaps in communication and information sharing within schools. Overall, these findings point to inadequate provision and awareness of disaster management resources, which may hinder effective preparedness and response in schools.

Qualitative responses further support this deficiency. Chiakariga zone Curriculum Support Officer remarked, “Disaster awareness materials, if available, can reduce the effects of disasters like droughts,” but lamented that most schools lacked these resources. Mutonga Primary School headteacher also pointed out, “There is no budget allocation for such materials, making implementation nearly impossible.”

4.3.2 Awareness Rating of Emergency Supplies Available in the School

The majority of respondents (51%) reported being very unaware of the emergency supplies available in their schools, while 49% indicated being unaware. No respondents reported being aware or very aware, and none selected the option of being neither aware nor unaware, as shown in figure 7.

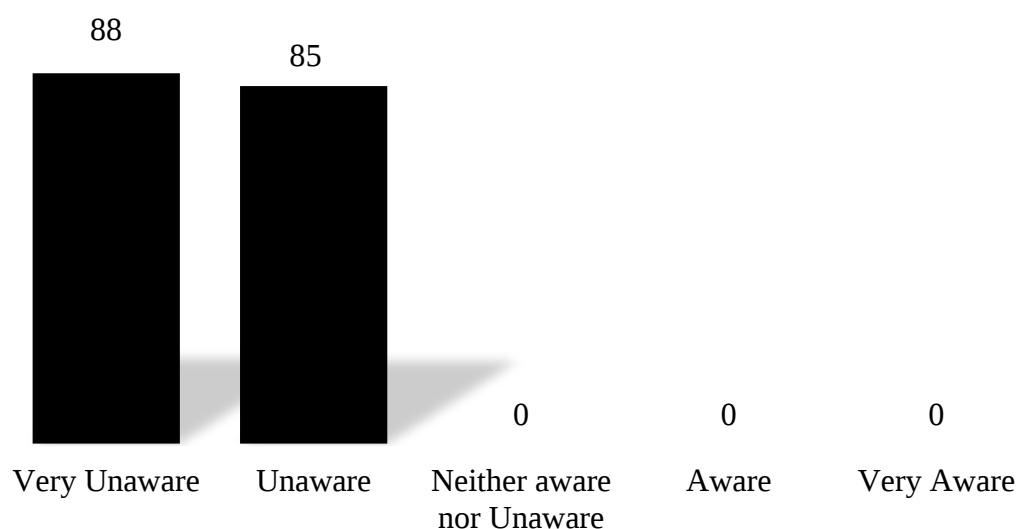


Figure 7: Emergency Supplies Awareness Rating.

4.3.3: Rating of Budget Allocation for Disaster Preparedness Resources in Your School

The majority of respondents (72%) rated the budget allocation for disaster preparedness resources in their schools as very inadequate, with 17% considering it inadequate. Only 11% were neutral on the adequacy of the allocation, and no respondents reported the allocation as adequate or very adequate, as shown in figure 8 below:

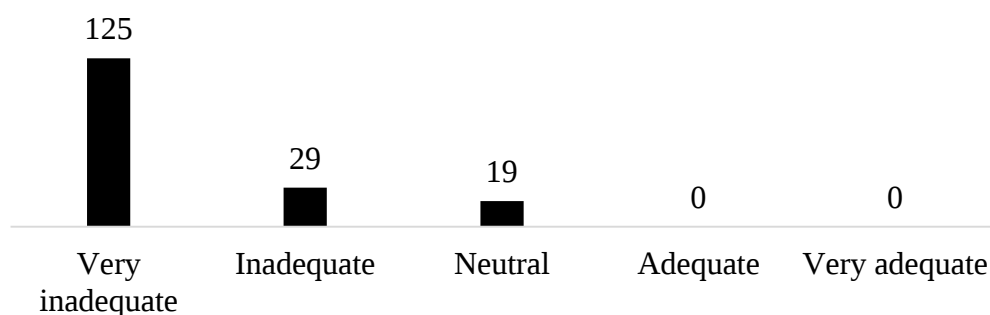


Figure 8: Adequacy of Budget Rating.

4.3.4: Accessibility rating of school resources for teachers, students, and staff

A significant majority of respondents (66%) rated school resources as inaccessible, while 22% considered them very inaccessible. Only 12% rated the resources as accessible, and none of the respondents selected very accessible or neutral.

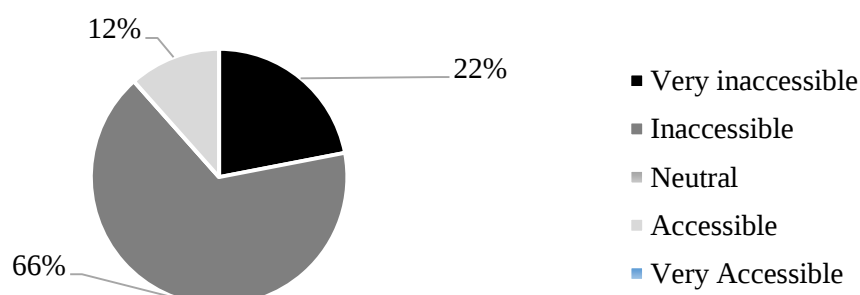


Figure 9: Accessibility of School Resources Rating.

4.3.5 Gaps Identified in Disaster Awareness Materials

The survey revealed several critical gaps affecting disaster preparedness in schools. Respondents most frequently cited the absence or unavailability of disaster awareness materials, with some indicating that such resources had never been provided. In some cases, materials existed but were inaccessible, limiting their usefulness. A portion of respondents were also unaware of whether their schools possessed any disaster-related resources, suggesting weaknesses in communication and information sharing. Additionally, a lack of training emerged as a recurring concern, undermining the ability of teachers and pupils to respond effectively to emergencies. These gaps are further illustrated in the distribution of responses shown in Table 11 below.

Table 11: Gaps Identified in Disaster Awareness Materials

Gap	Explanation
Lack of Materials	Numerous respondents mentioned the absence of disaster awareness materials, with several reporting that none are available or not yet provided.
Unawareness of Available Materials	Several respondents expressed being unaware of whether materials had been provided to their schools
Inaccessibility of Materials	Many respondents highlighted that the available materials are inaccessible.
Unavailability in Schools:	Respondents frequently noted the unavailability of disaster materials in schools, which they identified as a significant challenge.
Lack of Training	A recurring gap noted was the lack of training, which was frequently cited as a major issue preventing effective disaster preparedness.

4.3.6 Regression Analysis of Disaster Materials Access and Preparedness Confidence

Table 12: Regression Analysis of Disaster Materials Access and Preparedness Confidence

Metric	Value
R-squared	0.033
Coefficient (β)	-0.177
P-value	0.293
Intercept (Constant)	2.803
Number of Observations (n)	35

The outcome of disaster materials as measured by a composite of awareness of emergency supplies, adequacy of disaster budgeting, and resource accessibility on teacher confidence as to the readiness of their school to deal with disasters was determined by a simple linear regression. The model also showed that there exists a weak relationship between disaster materials available and preparedness confidence to be negative but not significant (-0.177, $p = 0.293$).

Only a 3.3 percent of variance in disaster preparedness confidence was explained by the regression model ($R^2 = 0.033$), indicating that more proficient factors may strongly forecast disaster preparedness confidence. Although the coefficient was negative, meaning that the lack of accessibility to materials could reduce confidence to some extent, this correlation was not statistically significant at the level of 0.05.

These findings suggest that, despite its theoretical significance, the potentially positive impact of the availability of disaster-related materials on preparedness confidence might be indirect when it is implemented separately of beneficial training or awareness campaigns or effective access systems. Context to this finding is presented by the qualitative responses of the respondents regarding material gaps, where they cited training and inaccessibility gaps, which points to aspects of the system fundamentally weakening the perceived effectiveness of the materials themselves.

These findings compare with existing literature on Celik (2020), who found out that the presence of disaster-related goods (e.g. emergency supplies and equipment) does not equate to better disaster preparedness. During the study, Celik pointed out that materials could not be effective in improving preparedness unless they were supported by the appropriate training and frequent drills. Without them, even the most equipped schools appeared to be unable to properly use the available resources in the case of emergencies. In a similar vein, though, Makhanu (2009) indicated that though sufficient materials were of paramount importance in theory, their efficacy was frequently hampered by insufficient training and access to resources. The current study findings also indicate this, with the negative coefficient of -0.177 indicate that limited access to materials might cause a decrease in the confidence in being prepared, although, this was not significant.

These findings also resonated with the study done by Gichuhi (2022), who has indicated that in the resource-poor settings, including most of Kenya, disaster material is traditionally underutilized because it is not integrated with the overall preparedness systems. Poor disaster budgeting and training has been cited as one of the factors that militate the effectiveness of the materials of enhancing disaster preparedness. Similar to Bulut (2020), it was also observed that resource availability in itself is not enough to drive up levels of confidence with regard to preparedness, and it needs to be combined with continuous training opportunities and awareness campaigns. The insignificance of the findings in this study implies the significance of this holistic approach, because even the provision of materials does not lead to higher preparedness, as training and systemic factors were found as playing a larger role.

Moreover, the qualitative feedback of the study participants showed the absence of not only access to materials but also training and awareness, as many of respondents mentioned that the lack of proper access to the materials frequently resulted in an increase of the level of insecurity. Such sentiments are also echoed by Oktari et al. (2018) who discovered that even though disaster kits and resources are provided in some schools, the inability to provide consistent and convenient training negatively affects how useful these resources might be perceived by their recipients. This opinion is reinforced by the current study advancing the idea of a synergetic combination of materials, training, and accessibility as the main ingredients of disaster preparedness.

4.4 Effect of School Disaster Management Policies on Disaster Preparedness

This section examines the impacts of disaster preparedness in public primary schools due to the presence, awareness, and enactment of disaster management policies in schools. Policies offer a formal scheme of risk reduction, emergency planning, and coordinated response but policy effectiveness is mostly determined by the way it is communicated, reviewed and supported by the school. The section will include a description of policy awareness, stakeholders' participation, and policy updating frequency descriptive statistics along with a regression analysis to determine the effect on confidence in preparedness. Qualitative data provided by the headteachers and key informants adds depth to the debate, showing more operational difficulties in implementation and policy holes.

4.4.1: Awareness Rating of the Existence of Written Disaster Management Plans

A majority of respondents (79%) rated themselves as either very unaware (40%) or unaware (39%) of the existence of written disaster management plans in their schools. Only 21% reported being aware of such plans, with none indicating they were very aware or neither aware nor unaware, as shown in figure below.

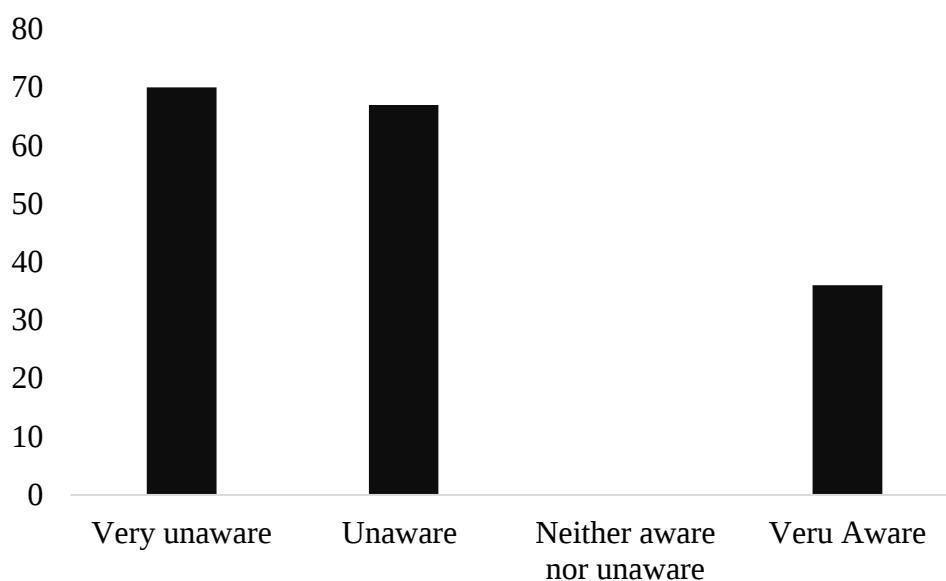


Figure 10: Disaster Plans Awareness Rating.

4.4.2: Frequency of disaster awareness policies review and update at school level.

The majority of respondents (79%) reported that disaster awareness policies are rarely reviewed and updated at the school level. A smaller proportion indicated that policies are reviewed occasionally (11%) or regularly (10%), while none reported that the policies are reviewed frequently or annually, as shown in figure 11 below.

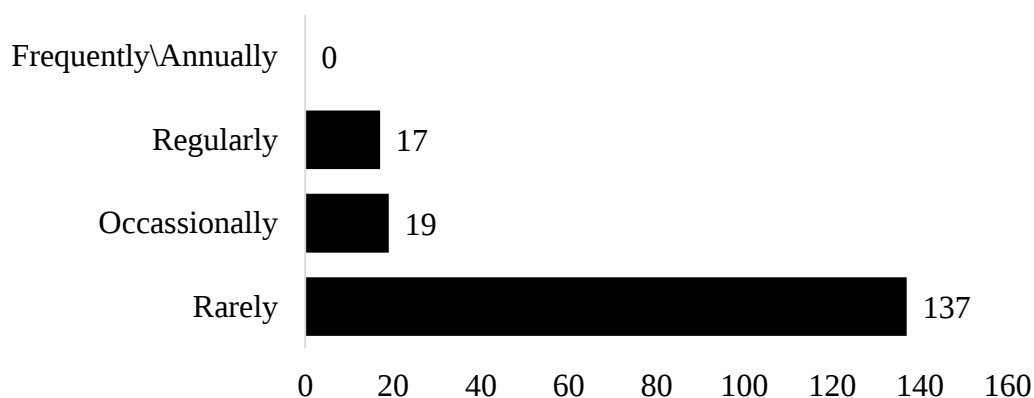


Figure 11: Frequency of disaster awareness review and update at school level

These findings align with the Curriculum Support Officer for Kamanyaki zone who stated, “There is no visible county support for disaster-affected schools, and policies

are not disseminated.” Furthermore, the lack of a disaster management policy in the education sector leaves schools vulnerable.”

4.4.3 Stakeholders Involvement in Shaping Disaster Awareness Policies in the School

A majority of respondents (55%) reported very low involvement of stakeholders in shaping disaster awareness policies in their schools, while 35% indicated low involvement. Only 10% reported a neutral level of involvement, with no respondents citing high or very high involvement.

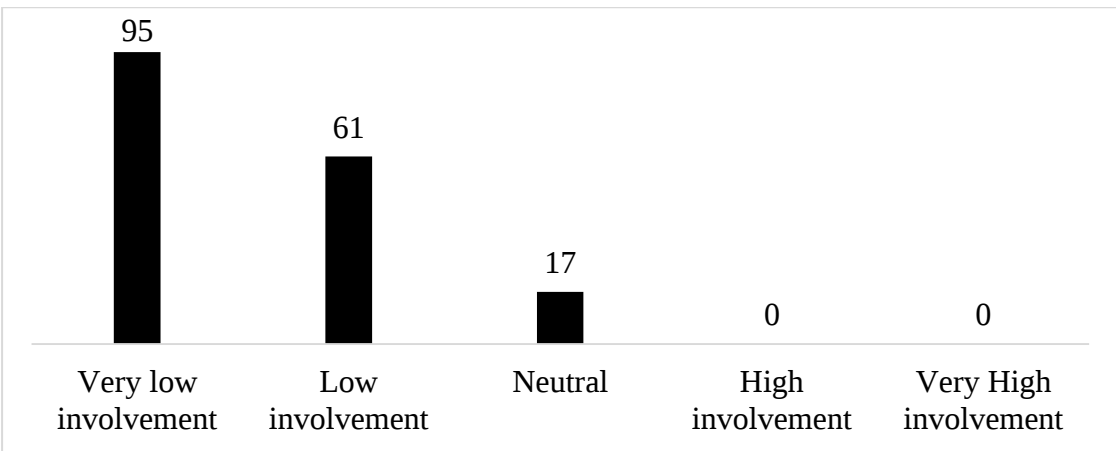


Figure 12: Stakeholder Involvement in Shaping Disaster Awareness Policies.

4.4.4 Gaps identified in Disaster Awareness Policies

The findings highlight multiple systemic gaps undermining the effectiveness of disaster awareness policies in schools. Lack of awareness among stakeholders emerged as a significant issue, indicating a weak understanding of existing preparedness frameworks. Many respondents also noted that policies are rarely reviewed or updated, reducing their relevance to current risks. Resource limitations including insufficient materials, funding, and trained staff were frequently cited as major barriers. The shortage of qualified personnel was particularly concerning, as it hindered both policy implementation and preparedness activities. Inadequate knowledge and training further compounded these challenges, leading to poor policy execution. Additionally, some respondents identified implementation failures, where policies existed but were not acted upon due to capacity gaps. A smaller yet important point was the lack of essential information reaching stakeholders, which limited

coordinated action. These gaps, summarized in Table 13, underscore the need for targeted interventions to strengthen policy awareness, resources, and capacity for effective disaster preparedness.

Table 13: Gaps in Disaster Awareness Policies

Gap	Explanation
Lack of Awareness	Many respondents mentioned a lack of awareness among the people, highlighting a significant gap in understanding disaster preparedness policies.
Lack of Review and Updating	A recurring issue identified was the lack of review and updating of disaster awareness policies, which was seen as a key gap.
Lack of Resources	Respondents frequently cited the lack of resources as a barrier to effective disaster awareness, which includes both materials and funding.
Lack of Personnel	A major gap mentioned was the lack of personnel to implement disaster awareness policies and manage preparedness efforts effectively. This includes both trained staff and sufficient numbers of people assigned to the task.
Lack of Knowledge and Training	Several responses pointed to inadequate knowledge and the lack of trained personnel as a critical gap in disaster preparedness. There was also mention of poor implementation due to inadequate training.
Implementation Challenges	Lack of implementation of existing disaster awareness policies was cited as a key challenge. Respondents noted that policies were often not put into action due to insufficient resources, training, or personnel.
No Essential Information	A smaller but recurring point was the lack of essential information provided to stakeholders, limiting their ability to act on disaster preparedness policies.

4.4.5 Regression Analysis of Disaster Policy Awareness and Preparedness Confidence

Table 14: Regression Analysis of Disaster Policy Awareness and Preparedness Confidence

Metric	Value
R-squared	0.031
Coefficient (β)	-0.139
P-value	0.313
Intercept (Constant)	2.73
Number of Observations (n)	35

To investigate the connection between the existence and quality of disaster management policies at schools and the confidence that the teachers had in disaster preparedness, a linear regression analysis was conducted. Policy Score was calculated as the average score of three types of ratings: the awareness of written disaster plan, the frequency of review and update of policy, and the involvement of stakeholders, and served as the independent variable.

The study produced a statistically insignificant negative correlation ($\beta = -0.139$, $p = 0.313$) between the policy score and confidence in preparedness. The total variance in preparedness confidence was only 3.1 percent predicted and explained ($R^2 = 0.031$), suggesting that the presence or quality of existing school-wide policies do not necessarily have lofty implications on teacher confidence.

These results can possibly be representative of the qualitative ratings given by the respondents, who highlighted the absence of visible county assistance, inherent rarity in assessing policies, and low stakeholder engagement. These policy gaps may reduce the perceived effectiveness of disaster policies and are one reason behind the weak relation. According to one key informant, “Disaster-affected schools are not supported visibly by the county, and policies are not diffused.” Another respondent contributed, “the absence of a disaster management policy in the education sector leaves schools vulnerable.”

In summary, the presence of the policies on foundational disaster is significant, though its potential to drive preparedness confidence can be relatively less practicable without the paramount levels of awareness, frequent update, and full-fledged stakeholder engagement.

This observation is contrary to the research conducted by Paci-Green et al. (2020), which highlights the importance of well-determined, frequently revised disaster policies, which enhance preparedness rates at educational establishments meaningfully. Paci-Green et al. discovered that the schools, where practices are inherently institutionalized e.g. through frequent reviews, and stakeholder interaction plays a significant role, contribute to increased confidence in the staff to manage

emergencies. Weak policy implementation as illustrated by the statistically nonsignificant findings of the present study may not necessarily signify an atrocity of the disaster preparedness policy idea itself.

Specifically, the negative coefficient of -0.139 in the present study implies that poor policy awareness and stakeholder engagement could indeed adversely affect confidence in preparedness efforts. This can be supported by Gichuhi (2022), who noted that the low levels of preparedness and low confidence among staff members in dealing with disasters were caused by the implementation of poor policies and a lack of a clear disaster management strategy in many schools across Kenya. As identified by Gichuhi, even though it had disaster preparedness guidelines, due to the lack of visibility and enforcement there was a decrease in faith in the practicality of these guidelines, which was shared by the respondents in this study.

These findings are also congruent with Aldrich (2015) who stated that effective policy implementation, regular policy update, can also be essential in enhancing preparedness outcomes. The indifferent connection between policy awareness and preparedness confidence observed in this study could have been contributed by the inconsistent nature of policy updates and the lack of active player involvement. Disaster Management policies were rarely reviewed by several respondents in this study and stakeholder participation was low. A respondent also specifically addressed why policies have not been diffused, saying, "Disaster-affected schools are not supported visibly by the county," which directly addresses gaps in policy that create fewer positive perceptions of disaster preparedness measures.

Moreover, Bulut (2020) indicates that such disaster preparedness policies work best when dynamic and adaptable to the fluctuating circumstances like climate change or conflict regimes. In a situation like Tharaka South Sub-County in which there are frequent floods, droughts, and ethnic conflicts, policies that have not been updated or re-evaluated after a specific period may not be considered practical or relevant, which would lower the confidence in preparedness.

4.5 Effect of Community Participation in Disaster Preparedness

This section discusses the nature of community participation in augmenting disaster preparedness in the public primary schools. Wide participation of parents, local leaders, and other community stakeholders is crucial in ensuring that a Collaboration and resilient school environment are created. The study is based on the frequency at which the community members are involved in awareness programs, policy debates and safety checks. The section evaluates, through descriptive statistics and regression analysis whether such involvement has a significant effect on preparedness confidence among school staff. Qualitative data also demonstrate the extent to which community engagement is perceived, the obstacles that restrain its efficacy.

4.5.1 Community Members' Involvement in Disaster Awareness in Schools

Rating.

The majority of respondents (62%) rated community members' involvement in disaster awareness in schools as low, while 38% considered it to be moderate. No respondents reported high involvement.

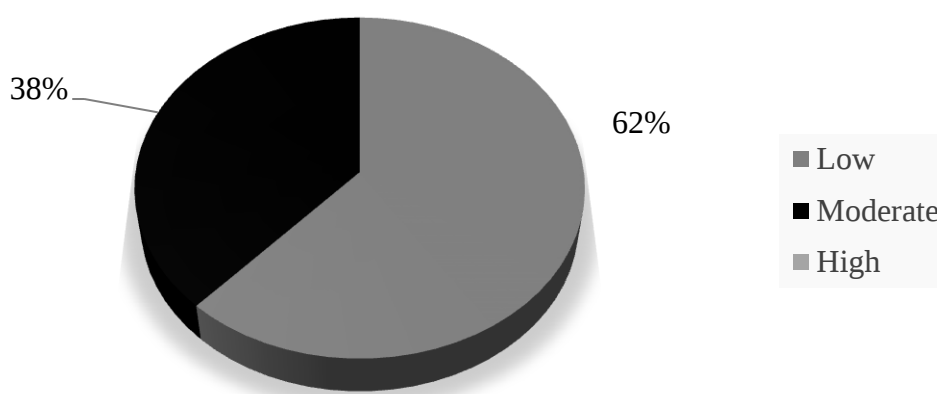


Figure 13: Community Involvement in Disaster Awareness Rating.

Headteachers supported these findings, unanimously agreeing that community participation is appropriate and crucial, yet highlighted its limited application in practice. Maweni Primary School headteacher added, “The community is not sufficiently engaged, though they could greatly enhance resilience and disaster response.”

4.5.2 Members of communities who are involved in disaster awareness in school (eg parents, police officers).

The study sought to identify which community members were most engaged in supporting school disaster preparedness efforts. Parents were the most frequently mentioned group (80%), suggesting that they play a central role in preparedness activities. School management (17%) and community leaders (14%) were cited less often, indicating that their involvement, while present, is comparatively limited. Notably, 25% of respondents reported no community participation at all, pointing to a significant gap in collaborative efforts between schools and their surrounding communities. The distribution of responses is presented in Table 15.

Table 15: Community Members Involved in Disaster Awareness at School Level

Community Members	Frequency (%)
Parents	80
Community Leaders	14
School management	17
None	25

4.5.3 Frequency of Community Members Involvement in Discussing and Evaluating Safety Audit Reports Conducted in the School

The majority of respondents (57%) reported that community members are involved in discussing and evaluating safety audit reports rarely, while 32% indicated never being involved. Only 11% stated that the involvement occurs sometimes, with no respondents indicating often or always involvement, as shown in figure 14.

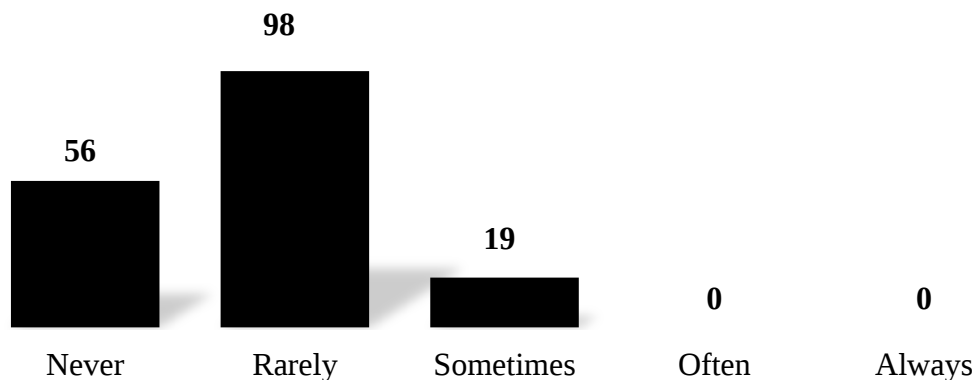


Figure 14: Frequency of Community Members Involvement in Discussing and Evaluating Safety Audit Reports Conducted in the School.

4.5.4 Frequency of Community Members Involvement in Disaster Awareness Policies Reviewed and Updated at School

The majority of respondents (55%) reported that community members are never involved in reviewing and updating disaster awareness policies at their schools, while 45% indicated rarely being involved. No respondents reported sometimes, often, or always involvement, as shown in Table 16 below.

Table 16: Frequency of Community Members Involvement in Disaster Awareness Policies Reviewed and Updated at School

Frequency of community members	Count	Percentage
Never	95	55%
Rarely	78	45%
Sometimes	0	0%
Often	0	0%
Always	0	0%

4.5.5 Gaps Identified in Disaster Awareness Policies

The findings revealed several persistent gaps in disaster awareness policies that hinder effective preparedness. A lack of awareness among community members, students, and staff emerged as one of the most frequently cited issues, indicating limited understanding of existing policies. Respondents also highlighted a lack of knowledge and mitigation measures, suggesting that even where policies exist, practical strategies to reduce risks are insufficient. Another notable concern was the lack of community involvement in both the development and implementation of these policies, which reduces local ownership and effectiveness. Furthermore, inadequate policy implementation was reported, with well-designed policies often failing to reach the intended audience due to resource constraints and weak engagement. These gaps, summarized in Table 17, point to the need for stronger outreach, training, and inclusive participation in disaster preparedness initiatives.

Table 17: Gaps Identified in Disaster Awareness Policies

Gap	Explanation
Lack of Awareness	A recurring theme was the lack of awareness among community members, students, and staff regarding disaster preparedness and policies. This was one of the most frequently mentioned gaps.
Lack of Knowledge and Mitigation Measures	Several responses pointed to a lack of knowledge, including inadequate knowledge of the policies and lack of mitigation measures to reduce disaster risks effectively.
Lack of Community Involvement	A significant number of respondents highlighted the lack of community involvement in shaping and implementing disaster awareness policies, noting that the community is not sufficiently engaged in disaster preparedness activities.
Inadequate Policy Implementation	A recurring concern was that policies, though good on paper, do not reach a wider audience and face poor implementation due to various factors, including insufficient resources and involvement.

4.5.6 Regression Analysis of Community Participation and Confidence in Disaster Preparedness

Table 18: Regression Analysis of Community Participation and Confidence in Disaster Preparedness

Metric	Value
R-squared	0.019
Coefficient (β)	-0.216
P-value	0.429
Intercept (Constant)	2.85
Number of Observations (n)	35

A linear regression was performed to determine whether the measure of community participation had any effect on disaster preparedness in schools. The community participation, was quantified based on scores of community involvement in creating awareness, community engagement in the process of conducting safety audits and were also included in the policy review process.

The model indicated that the correlation between disaster preparedness and community participation was marginal (0.216, $p = 0.429$). The R^2 of 0.019 shows that the R^2 was only 1.9 percent which signifies that the variance in preparedness confidence was confined to community involvement.

These results are consistent with the qualitative data indicating the low community engagement even though it could be beneficial. According to the Curriculum Support Officer Chiakariga zone, “The community does not engage enough with the schools, yet the community can significantly improve on resilience and disaster response.”

These results do not correlate with earlier studies that have continually flagged the relevance of community participation in advancing disaster preparedness. Specifically, Hoffmann and Muttarak (2017) have made it clear that among the most effective techniques of enhancing disaster resilience in schools, they have noted community participation. In their research they discovered that the schools which had an active community in the process of disaster risk reduction were better equipped to manage emergency situations, as community was involved in mobilization of necessary resources as well as in training. The findings of this study however suggest that the low level of community participation in Tharaka South might be seen to compromise the goodness that might be associated with participation since the participating members of the community were found to be less active in significant aspects including those of safety audit exercises and policy review facilities.

However, the negative connection in the present study ($\beta = -0.216$) agrees with the results reported by Gichuhi (2022), who highlighted that in certain resource-poor settings, the engagement of the community has been minimal because of the socio-cultural factors, which comprise a lack of mutual trust between communities and schools, as well as a lack of defined disaster preparedness roles. This constraint indicates the problems of establishing active, stable community engagement, which plays a leading role in disaster preparedness (Baytiyeh, 2019).

Moreover, the insignificance in results ($p = 0.429$) proves the idea that community involvement in itself cannot help significantly increase preparedness confidence. According to Liu et al. (2023), WM added a crucial element to disaster preparedness, combining the community involvement strategy with other organizational initiatives, including policy making, training course, and supply of materials. Although community support is a good addition, this addition should constitute a system

approach that should bring on board policy reforms, in-school training, and proper resource allocation.

The results of this study also align with those of Atkinson and Fowler (2023), who stated that without sustained and well-directed community participation, most disaster preparedness efforts rarely have a meaningful effect. Their study revealed that isolated activities like the occasional gathering of people in the community without subsequent activities seldom lead to enhanced readiness to deal with disasters. The Curriculum Support Officer in the Kamanyaki zone agrees with this saying that, “Community involvement with the schools is lacking, but the community can make a huge contribution to resilience and disaster response.” This feeling also supports the marginal influence of this research.

Furthermore, the research echoes a larger problem as determined by Oktari et al. (2018), who claimed that although community participation is seen as an essential element of disaster preparedness, its efficient execution is negatively affected through low-coordination levels between school and community, incompatible training, and limited resources. Such concerns are especially common in the disaster-prone areas where people can experience competing priorities and ignorance of their responsibilities in case of a disaster.

Although this regression analysis was not statistically significant, qualitative data have shown the descriptive context, where poor community engagement and an absence of explicit communication were major obstacles to enhancing disaster preparedness. One respondent noted that there should be increased involvement of the community with the schools, as there was an indication that the community was not involved sufficiently in the preparedness efforts at the schools. Even community mobilization (e.g. disaster preparedness workshops or safety audits led by the community) could help schools greatly and in the long-term enhance their confidence towards safety preparedness.

To sum up, community engagement is theoretically such a significant element in disaster preparedness, yet the results of the given study do indicate that its current influence in Tharaka South Sub-County is not significant at least because of lower

levels of engagement and coordination. When community participation is to play a pivotal role towards enhancing disaster preparedness, it should also coexist with other larger strategies such as training, reviews and resource mobilization. These findings suggest the necessity of building more solid schools, community and- local government relationships in empowering communities in disaster preparedness and making sure that community participation results in concrete, executable results.

4.6 Assessment of School Disaster Preparedness

In this section, a general view of the levels in disaster preparedness in public primary schools is provided, and it produces some of the major indicators, which were addressed in the chapter. It aims at how far schools are prepared to react successfully to the emergency on available training, available resources, policies, and community participation. A combined compilation of the available ratings of preparedness, as well as gaps identified, allow the section to view the overall picture of the current state of preparedness. The results provide a considerable understanding of the strong and weak points with suggestions on how to enhance the school disaster preparedness plans.

4.6.1 Types of disasters

The study documented a range of disasters that have occurred in schools within the study area, along with the responses employed to manage them. Floods were among the most frequently mentioned, with parents contributing funds and labour to rebuild damaged infrastructure. Fires were addressed with learner involvement in extinguishing flames, alongside reports of theft and wind damage to structures during such events. Hunger and famine and drought were also noted as significant challenges, though respondents provided no specific management strategies for these occurrences. Strong winds and storms caused structural damage, with management efforts focused on clearing blocked access, such as removing fallen trees. The responses highlight a reliance on community-driven solutions but also indicate gaps in formal disaster management planning and preparedness. The detailed breakdown is presented in Table 19.

Table 19: Disasters that have ever Occurred in your School and how you Managed it.

Disaster	Management.
Floods.	Parents were called upon to contribute funds for rebuilding collapsed buildings, and they also participated manually in the reconstruction.
Fire	Learners were involved in putting out fires, and there were mentions of theft and structures being blown away by wind.
Hunger/Famine	No specific management details provided for hunger and famine, but it was noted as a significant issue during disaster events.
Drought	No direct management action mentioned for drought, but it was included among the disasters that occurred.
Strong Winds	Destruction of buildings and structures. Specific management involved efforts to deal with the aftermath, though no detailed actions were provided.
Storms	The response included cutting trees that blocked classrooms, although the specifics of storm damage management were not detailed.

Key informant data reinforces these experiences. Droughts, floods, and storms were consistently cited as the most frequent disasters, with the Sub-County Director of Education Tharaka-South stating, “Drought is a recurring disaster that affects attendance and learning continuity. Furthermore, storms and floods often damage infrastructure, requiring manual community reconstruction efforts.”

The types of disasters that have occurred in the schools are clearly documented, with floods, drought, storms, and hunger/famine being the most frequently mentioned incidents. In terms of disaster management, responses varied by type, with community involvement playing a significant role in recovery efforts. The manual reconstruction of buildings after floods and storms highlights the reliance on community support, particularly in the absence of structured governmental assistance. This community-driven response is consistent with findings from Gichuhi (2022), who also noted that in resource-constrained regions like Tharaka South, community participation is often crucial in disaster response.

However, as pointed out by Muiruri (2023), drought and hunger were not met with structured disaster management plans, reflecting a gap in preparedness for these recurring crises. The findings align with Makhanu (2009), who emphasized that school-based disaster management plans often lack provisions for slow-onset disasters like drought or food insecurity. These findings suggest that disaster management policies should be more inclusive, incorporating both immediate response measures (e.g., floods, storms) and long-term interventions (e.g., droughts, famine).

4.6.2 Number of drills conducted in school annually.

The data on the number of drills conducted annually at the school reveals that, on average, 0.2 drills are performed each year. The median and mode values are both 0, indicating that for most respondents, no drills are conducted. The least number of drills reported is 0, while the most reported drills are 2.

Table 20: Measures of Central Tendencies on Drills Conducted in Schools Annually

Mean	Median	Mode	Least	Most
0.2	0	0	0	2

4.6.3 Effectiveness of Pre- and Post-Training Surveys in Assessing Knowledge Levels on Disaster Preparedness at your School Rating

The effectiveness of pre- and post-training surveys in assessing knowledge levels on disaster preparedness at the school is rated as follows: 41% of respondents felt the surveys were not effective at all, while 34% considered them slightly effective. A smaller proportion of 23% rated them as very effective, and 2% believed they were moderately effective.



Figure 15: Effectiveness of Pre- and Post-Training Surveys in Assessing Knowledge Levels on Disaster Preparedness at your School Rating.

4.6.4 Confidence Rating of the Community in School's Disaster Preparedness

The majority of respondents (46%) reported low confidence in the school's disaster preparedness, followed by 34% who expressed very low confidence. A smaller proportion of 11% indicated moderate confidence, and only 10% of respondents reported high confidence.

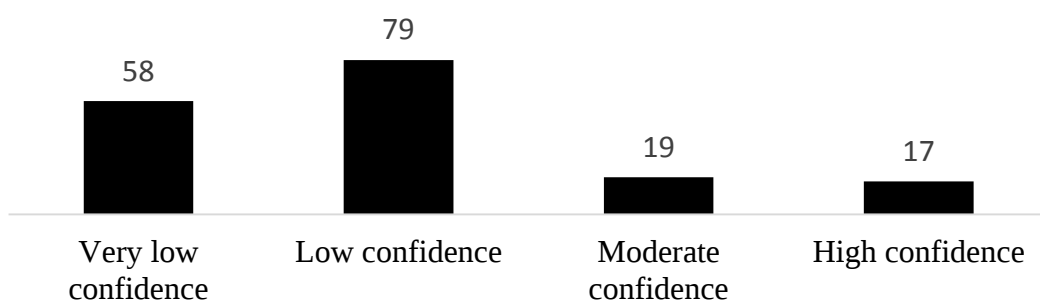


Figure 16: Confidence rating of the Community in your School's Disaster Preparedness.

This perceived lack of preparedness is underscored by qualitative responses. One headteacher stated, "There is a general lack of preparedness, and without knowledge and funds, we cannot respond effectively." Another emphasized, "The community lacks confidence in the schools because nothing is in place to reassure them."

The confidence of the community in the disaster preparedness of the schools is worrying as 46 percent of the respective schools reported low confidence and 34 percent reported very low confidence. This is even supported by the qualitative data where the respondents reported that there is nothing in place to give them assurances that the school can manage a disaster.

These results align with those of Wainaina (2012) who concluded that, in many cases, communities do not trust the preparedness to disasters in schools because of the poor state of transparency and communication about the preparedness measures. Hoffmann and Muttarak (2017) state that trust in disaster preparedness work is essential and should be generated through community activation since a lack of community

participation usually leads to low-trust. In the current study, the low confidence level of the community indicates the necessity of enhanced communication, interactions and illustrated preparedness activities by schools.

4.6.5 Compliance with building codes

The compliance with building codes in the school was rated as follows: 29% of respondents considered the school to be non-compliant, while 22% rated it as very non-compliant. A significant portion of respondents (38%) were neutral regarding the compliance status, and 11% believed the school to be very compliant, though none reported the school as compliant.

The finding corresponds with that of Newnham et al. (2023), who concluded that code non-compliance in schools in developing countries is a serious problem. Lack of compliance exposes the non-compliant persons to higher risks in the case of a disaster, especially in flood-prone and storm-prone regions. The safety standards, such as integrity of the structure, that schools need to follow were also highlighted by Baytiyeh (2019) so that the risks of disasters could be minimized. The poor compliance observed in this research area indicates a dire need to impose strict measures of bringing building codes to the fore, so that the infrastructure can be in good standing to withstand the onslaught of a disaster.

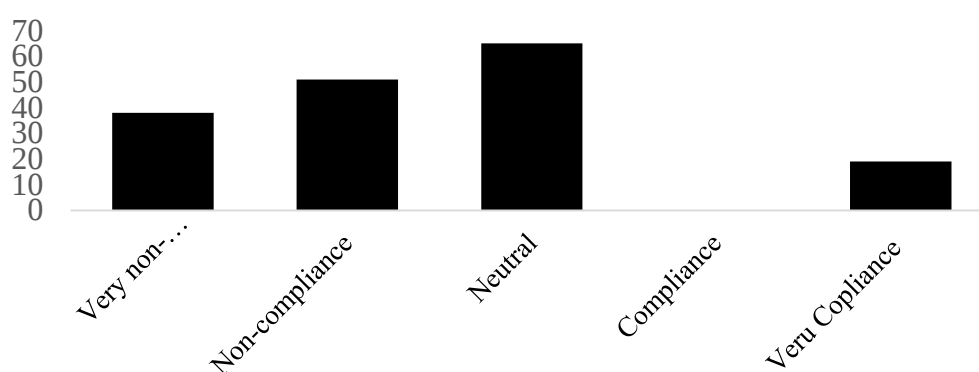


Figure 17: Compliance with building codes

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This study examined the relationship between disaster awareness and preparedness in public primary schools in Tharaka South Sub-County, an area prone to both natural and human-induced disasters. Guided by the Social Learning Theory and Ecological Systems Theory, the study explored four key dimensions: disaster awareness training, availability of disaster preparedness materials, school disaster management policies, and community participation. Data were collected from 173 teachers, 5 head teachers, and 4 key informants using questionnaires and interviews, and analyzed using both quantitative and qualitative approaches.

The findings revealed that disaster awareness training among teachers and pupils was limited and irregular. A significant proportion of respondents reported that their schools had not conducted any structured training in the past year. Where training existed, it was poorly funded and conducted on an ad hoc basis, often only when external partners initiated it. The lack of regular, structured training contributed to low levels of preparedness and response capacity in most schools. These results are consistent with previous studies such as Gichuhi (2022), which observed similar training gaps in rural Kenyan schools. This suggests that sustained and well-coordinated training programs are essential in equipping school communities with knowledge and skills to respond effectively to emergencies.

The study established that the majority of schools lacked basic emergency and preparedness resources. Many did not have first aid kits, firefighting equipment, evacuation maps, instructional posters, or relevant disaster response manuals. Respondents highlighted a clear gap between disaster management policy statements and actual resource availability on the ground. This aligns with UNESCO (2012), which found that limited resource allocation remains a major barrier to preparedness in public schools across developing countries. Inadequate access to these materials

limits schools' capacity to provide immediate response during disasters, increasing the vulnerability of both pupils and staff.

Although some schools reported having disaster management policies in place, these were often outdated, poorly communicated, and rarely practiced. Many teachers were unaware of the existence of such policies, and where they existed, there was limited stakeholder involvement in their formulation or review. This finding echoes Nyakundi (2012), who documented weak policy implementation in Kenyan public schools. Without current and functional policies, schools lack clear guidance for coordinated disaster response, limiting their overall preparedness and resilience.

Community participation in disaster preparedness initiatives was generally low. Although schools occasionally engaged parents and community members for specific activities, there were no structured, continuous mechanisms for involvement. Respondents emphasized the need for stronger community-school partnerships to support preparedness activities, including resource mobilization, emergency response, and post-disaster recovery. These findings are consistent with Oktari et al. (2018), who argued that meaningful community involvement is a key driver of resilience in school disaster management programs.

5.2 Conclusion

This study reveals systemic shortcomings in disaster preparedness across public primary schools in Tharaka South Sub-County, underscoring the urgent need for targeted interventions in Kenya's education and disaster risk management sectors. While training on disaster awareness emerged as the most influential factor in boosting preparedness confidence, its impact is currently undermined by irregular delivery, lack of structured curricula, and limited integration into school development plans. Conversely, the relatively weaker influence of disaster source identification and policy efficiency reflects the absence of regularly reviewed, context-specific frameworks that can guide both preventive and responsive measures.

These gaps rooted in inconsistent training, inadequate resources, outdated or poorly enforced policies, and minimal community engagement mirror broader challenges in aligning school-level preparedness with national frameworks such as the Basic

Education Act (2013), the Kenya Disaster Risk Management Policy (2022), and the Sendai Framework for Disaster Risk Reduction (2015–2030). Addressing them is not merely a school administration issue, but a development priority with implications for safeguarding children's right to education, protecting public investment in school infrastructure, and fostering community resilience in disaster-prone regions.

Systemic reforms should therefore go beyond ad-hoc fixes to include institutionalizing disaster preparedness training within teacher professional development, embedding disaster risk reduction into the primary school curriculum, ensuring equitable resource allocation for preparedness materials, and strengthening policy enforcement through community-inclusive mechanisms. Such measures will not only enhance school readiness to respond to emergencies but also contribute to Kenya's broader goals of sustainable development, educational continuity, and resilience-building at the grassroots level. The regression analysis depicted statistically significant positive linkage between the frequency of disaster awareness training and preparedness confidence, with 0.333 as the coefficient and $p < 0.001$. The R-squared value was 1 implying that 100 percent of variance in preparedness confidence occurred due to frequency of training. Such a close association grants weight to the conclusion that disaster awareness training plays a central role in strengthening the preparedness confidence of schools. The analysis also showed that training is not very common or uniform across schools and that there were many schools that did not have systematic training programs. Incoherent delivery of training, albeit effective, reveals the underlying problem that manifests in the prioritization of disaster awareness training.

Consequently, the research finds that more periodic and high-quality training is critical to optimizing preparedness confidence levels throughout schools. To implement disaster training to improve disaster response strategies, schools in Tharaka South should have a consistent and practical disaster training program whereby teachers and students are provided with skills and knowledge that will guide them to act within disaster situations. The regression analysis of disaster material access was weakly negatively correlated with an r of -0.177, and $p=0.293$, and the R squared of 0.033, meaning that only 3.3 per cent of the variation in preparedness

confidence could be proved by the materials accessibility. Although the coefficient was slightly negative, the finding was not significant and it indicates that preparedness confidence is not significantly influenced by the absence of disaster materials. This shows that the materials such as first aid kits and emergency signage are required but cannot stand alone running the risk of having no significant impact on disaster preparedness confidence.

The qualitative data showed that a lack of quality materials prevented effective disaster response, although this frequently was accompanied by an absence of training and impractical policy. These results indicate that access to materials by itself is not adequate to improve preparedness confidence. The inference here would be that the availability of materials is important, but more important is training, stakeholder engagement, and policy implementation that help to enhance preparedness.

Regression analysis on disaster policy awareness displayed negative correlation (613, 0.313) and R^2 of 0.031 indicating that presence and quality of disaster management policies explained only 3.1 percent of variation in confidence of preparedness. Although the policies are theoretically significant, based on the findings, the policies on preparedness confidence would not affect the schools in practice.

The negative coefficient, as well as statistical insignificance, highlights poor execution of disaster management policies within these schools. The policies in most schools were outdated, practically unreviewed and poorly implemented, with little stakeholder input. This conclusion was supported by the qualitative data as the respondents believed that the policies were not effectively shared, and the majority of participants or teachers had no idea about existing policies.

The study hence concludes that in order to make policies effective, they have to be updated regularly, reviewed, and communicated to all stakeholders in relation to improving preparedness. The schools should consider active stakeholder involvement in policy formulation and review to make policies be both relevant and functioning. Regression analysis of community participation showed that there was a weak negative correlation ($p = 0.429$) and R squared value 0.019, which means community

participation explained 1.9 percent of the variance in preparedness confidence. Although it was a negative relation, the outcome of the result was not significant, implying that low community participation levels did not have significant impact on preparedness confidence within the schools.

This observation is corroborated in the qualitative findings, which revealed that despite the theoretical significance of the community participation in school disaster preparedness, the practical participation was minimal. Respondents observed that community members were sometimes engaged in disaster response, especially those that required manual reconstruction during floods, but there were no routine engagements and the collective preparedness exercises.

The research concludes that though community involvement is a vital factor in developing resilience, its influence on the confidence level in preparedness is low without persistent participation and definite roles among community strangers. To improve preparedness school should prioritize to establish collaborative relationships with their local communities using formalized disaster preparedness committees and yearly safety drills.

5.3 Recommendations

Based on the findings and direct feedback from participants, the following recommendations are proposed: In partnership with the local authorities and non-governmental organizations, the Ministry of Education needs to ensure that they provide teachers and students disaster preparedness training at least every three months. These trainings must include practical skills like fire drills, emergency evacuation procedures, and first aid, and disaster simulation exercises in order to gain the confidence in disaster response in real life situations. The trainings must be made to be interactive and practical, with scenarios that create a real-life disaster experience. This will make sure that teachers and students are not only cognizant of the safety procedures but also capable of them.

The current school curriculum ought to include disaster risk education, especially in courses like Social Studies, Science, and Civics. Examples in the curriculum must be locally relevant with reference to disaster risks prevalent to schools in Tharaka South,

like floods, droughts, and ethnic conflicts. This strategy will enable the students to contextualize their learning with practitioner cases thus increasing the applicability of the material.

The government along with partners in development should make sure that the schools are well equipped with disaster preparedness resources such as first aid kits, fire extinguishers, disaster awareness posters, emergency signage, and safety equipment's. There should be specific allocation of funds in school budgets to cater to the acquisition of these resources and to keep them in position and fix with the maintenance and upkeep. Emergency supplies should be replenished and schools should have reliable sources of obtaining them.

Every school must have and keep a modernized disaster management plan that is complete, actionable, and well-communicated. All areas of disaster preparedness, such as risk identification, evacuation processes, first aid response, and community involvement, should also be integrated into this plan. All stakeholders involved in the schools, including teachers, schools' administrators, parents, and local community leaders, should review and update disaster management policies together at least twice a year. Effective policy reviews that incorporate a wide range of stakeholders make the policies relevant, practical, and changing disaster risks.

The implications of the research presented can affect several participants of the disaster preparedness process in public primary schools. The Ministry of Education is instrumental in making disaster preparedness a top funding priority and ensuring that the school curriculum includes disaster risk education and training logistics. This will help in ensuring there are resources and frameworks that schools can use to ensure proper disaster preparedness strategies.

School administrators play an important role in fronting preparedness actions at the local levels. They must lead the way in terms of coordination and hosting regular policy audits and emergency response drills in their schools, must also ensure all staff available has the necessary knowledge and skills needed and ready to respond to

emergencies. They should also promote a culture of preparedness by engaging the staff in decision-making procedures involving disaster response and management.

NGOs and donors also play an important part in facilitating the necessary provision of material resources in disaster preparedness, technical support, and in jointly facilitating training programs. They could greatly complement the effectiveness of preparedness efforts, especially in areas characterized by the limitation of resources, by making sure that schools receive the tools and knowledge needed to effectively respond to disasters.

Lastly, the parents and the local leaders should be actively involved in the programs of disaster preparedness. They play an important role in creating trust and a shared sense of responsibility between schools and community. With the inclusion of these stakeholders, schools were able to create more effective community-school collaborations that can enhance the general outcomes of disaster preparedness initiatives in the long run and make them more sustainable and effective.

5.5 Suggestion for Further Research

- i. Future research should take a more comparative approach, examining school disaster preparedness across different sub-counties and counties in Kenya for example, comparing rural, disaster-prone regions such as Tharaka South with urban counties like Nairobi or Mombasa. This would help identify how contextual factors such as geography, socio-economic conditions, and levels of community engagement influence preparedness outcomes, and allow for the identification of best practices that could be adapted to different settings.
- ii. Further studies could focus on private primary schools and faith-based institutions to determine whether variations in governance, funding, and policy enforcement affect their readiness compared to public schools. This would broaden the evidence base for developing inclusive national strategies that address all types of learning institutions.
- iii. The role of digital learning tools and mobile technology in enhancing disaster awareness and preparedness particularly in rural schools also warrants exploration. Specific areas of interest include the use of mobile alerts, disaster

preparedness applications, interactive e-learning modules, and online teacher training. Such studies could assess both the feasibility and the measurable impact of technology-based interventions on the knowledge and preparedness levels of students, teachers, and community members.

- iv. To understand the sustainability of preparedness improvements, longitudinal studies should be undertaken to track the effects of continuous training and regular provision of preparedness resources over several years. This would quantify whether consistent interventions lead to lasting improvements in resilience and confidence during real disaster events.
- v. Finally, research should examine the effectiveness of localized disaster preparedness plans tailored to the most common hazards in specific regions—such as floods in Budalangi, drought in Turkana, or ethnic conflict in parts of the Rift Valley—compared to generic, nationally applied plans. Such studies could provide evidence on whether a hazard-specific, community-driven approach yields better preparedness outcomes.

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APPENDICES

Appendix I: Introduction Letter

The Head Teacher

[Name of Public Primary School]

Tharaka South Sub-County

Tharaka Nithi County

OR

The Sub-County Director of Education

Tharaka South Sub-County Education Office

Tharaka Nithi County

Subject: Request for Participation in Research Study on Disaster Preparedness

Dear [Head Teacher/Sub-County Director],

I am a postgraduate student at Chuka University, conducting a master's research study titled "Effect of Disaster Awareness Strategies on Preparedness in Public Day Primary Schools in Tharaka -Nithi County." The study aims to enhance school safety by assessing the impact of disaster awareness training, materials, management policies, and community participation on preparedness, addressing vulnerabilities to floods, droughts, and ethnic conflicts prevalent in the region.

I kindly request your permission to involve your school or office in this study. The research targets 173 teachers, 5 head teachers, and 4 Sub-County Education Office informants across 45 public primary schools in Kamanyaki, Chiakariga, and Tunyai zones. Selected teachers will complete questionnaires, while head teachers and informants will participate in brief interviews, scheduled for July–August 2025. Participation is voluntary, and respondents may withdraw at any time without consequences. All data was anonymized to ensure confidentiality, and findings was used solely for academic purposes, with aggregated results shared to inform school safety policies.

Your support is vital to improving disaster preparedness in Tharaka South's schools. For questions or further details, please contact me at +722342491or cnyagahs20@gmail.com. I have obtained ethical approval from my university and the

Tharaka South Sub-County Education Office, ensuring compliance with research standards.

Thank you for considering this request. I look forward to your favourable response.

Yours sincerely,

Charles Nyagah Chabari

master's Student,

Chuka University.

Appendix II: Questionnaire for Teachers

Dear Respondent,

Kindly answer the following questions by ticking the correct answer or by providing the information to the best of your knowledge as requested. The information you provide here was treated as confidential and will not be used for any other purpose other than this study.

DO NOT INDICATE YOUR NAME

Section A: Demographic Characteristics of the Respondents

1. What is your Gender?
Male ☐ Female ☐
2. Kindly specify your age group?
Below 30 years ☐ 31-40 years ☐ 41-50 year ☐ 51 years and above
3. Marital status
Single ☐ Married ☐ Separated ☐ Widow ☐
4. Highest level of education
Diploma ☐ Graduate ☐ Post-graduate ☐ others.....
Specify ☐
5. Years of experience working in public primary school in Tharaka Nithi County
Less than 5 years ☐ 5- 10 years ☐ 10-15 years ☐ Over 15 years ☐

SECTION B: Effect of Disaster Awareness Training in Disaster Preparedness in Public Primary Schools

1. Please rate your awareness of the disaster training for disaster preparedness provided in public day primary schools?
Very unaware ☐ Unaware ☐ neither aware or unaware ☐ Aware ☐ Very aware ☐
2. If you are aware, how often are the training offered?
Never ☐ Rarely ☐ Sometimes ☐ Frequently ☐ Always ☐
3. What is the percentage of the trained staff on disaster preparedness in this school?
A few: 1-25% ☐ some: 26-50% ☐ Most: 51-75% ☐ All: 76-100% ☐
4. What is the percentage of trained pupils on disaster preparedness in the school
A few: 1-25% ☐ some: 26-50% ☐ Most: 51-75% ☐ All: 76-100% ☐

SECTION C: Availability of Disaster Awareness Materials/Resources and Its Effects on Disaster Preparedness.

1. Please rate your awareness of any emergency supplies available in the school?
Very unaware ☐ Unaware ☐ neither aware or unaware ☐ Aware ☐ Very aware ☐

If you are aware, please indicate the number of emergency supplies in the school?

.....
.....

2. How can you rate the adequacy of budget allocation for disaster preparedness resources in your school?
Very inadequate [] Inadequate [] Neutral [] Adequate [] Very adequate []
3. Please rate the accessibility of school resources for teachers, students, and staff

Very inaccessible [] inaccessible [] Neutral [] accessible [] very accessible []

SECTION D: Effect of School Disaster Management Policies on Disaster Preparedness.

1. Rate your awareness of the existence of written disaster management plans?
Very unaware [] Unaware [] neither aware or unaware [] Aware [] Very aware []
2. How often are disaster awareness policies reviewed and updated at your school?
Rarely [] Occasionally [] Regularly [] Frequently/Annually []
3. Rate the extent to which various stakeholders are involved in shaping the disaster awareness policies at the school?
Very low involvement [] low involvement [] Neutral [] High involvement []
Very high involvement []

SECTION E: Effect of Community Participation in Disaster Preparedness.

1. How often are safety audit reports conducted in the school?
Never [] Rarely [] Sometimes [] Often [] Always []
2. How often are disaster awareness policies reviewed and updated at your school?
Never [] Rarely [] Sometimes [] Often [] Always []
3. Are there evidences of compliance with building codes?

Very non-compliant [] Non-compliant [] Neutral [] Compliant [] Very compliant []
4. Please rate the extent to which school facilities are upgraded following the assessment of its state of emergency preparedness?
No upgrade made [] Minimal upgrade made [] Moderate upgrade made []
Significant upgrade made [] Extensive upgrade made []

SECTION F: Assessment of School Disaster Preparedness

1. To the best of your knowledge, please indicate how many drills are conducted at the school annually
.....
.....
2. How would you rate the effectiveness of pre- and post-training surveys in assessing knowledge levels on disaster preparedness at your school?
Not effective at all [] slightly effective [] moderately effective [] Very effective []
3. How would you rate the effectiveness of attitude scales in measuring perceptions of disaster preparedness before and after training sessions at your school?
Not effective at all [] slightly effective [] moderately effective [] Very effective []
4. How would you rate the level of confidence the community has in your school's disaster preparedness?
Very low confidence [] Low confidence [] Moderate confidence [] High confidence []

Thank you for your Participation in this Study.

Appendix III: Key Informant Guide

- i. In your assessment, and based on your experience, which disasters are mostly frequent in public primary schools in Tharaka Nithi County? (Probe on: type of disasters, number of occurrence and magnitude of occurrence)
- ii. In your opinion, how does the marginal status of the County contribute to the prevalence of disasters in public primary school? (Probe on; arid and semi-arid nature of the county, drought, poverty levels, insecurity and ethnic conflicts)
- iii. What is the contribution of disaster awareness training in disaster preparedness in public primary schools in the County? (Probe on; frequency of training, percentage of trained staff and the proportion of students' participation)
- iv. What are the contributions of disaster awareness materials and their effects on disaster preparedness in public primary schools in the County? (Probe on; number of emergency supplies, accessibility of resources and the budget allocated for disaster preparedness resources)
- v. What are the effects of school disaster management policies on disaster preparedness in public primary schools?
- vi. How does community participation contribute to disaster preparedness in the primary schools in this County? (Probe on; safety audit reports, evidence of compliance with building codes and upgrade made on facilities post-assessment)
- vii. What steps have you taken to enhance schools implement and adhere to various safety procedures and protocols designed to protect schoolchildren and staff

Appendix IV: In-depth Interview Guide for Head Teacher

Section 1: Demographic information

1. Age of participant:
 - a. Less than 30 ()
 - b. 31 - 40years ()
 - c. 41 – 50years ()
 - d. Above 50 years()
2. Gender
 - a. Female()
 - b. Male ()
3. Highest level of Education attained;
 - a) Certificate ()
 - b) Diploma ()
 - c) Undergraduate degree ()
 - d) Post graduate education level ()
4. How many years of experience do you have in a management-level role as a Headteacher?
 - a. Less than 5 years ()
 - b. 5-10 years ()
 - c. 10-15 years ()
 - d. More than 15years ()

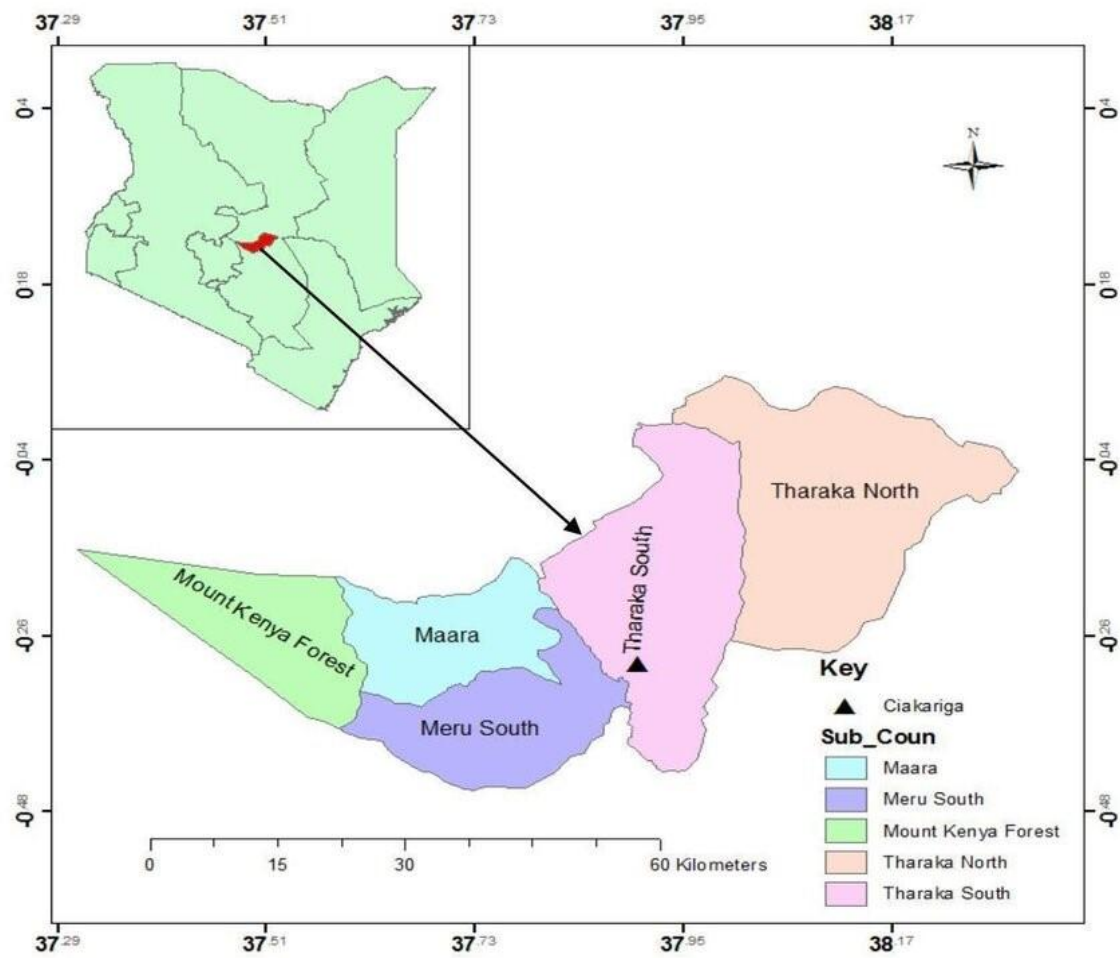
Section 2: Disaster Awareness and Preparedness in Public Primary Schools

- i. What are your thoughts on disaster awareness in public primary schools in Tharaka Nithi County? (Probe on pupils, teachers and staff awareness, government policy, school awareness efforts, available systems to support awareness efforts).
- ii. In your opinion, is disaster awareness your primary schools a priority? (Probe on allocation of funds vis-à-vis development plan, do you consider safety system and protocols as an urgent development need in your school)
- iii. On observation, there are alarming occurrences of disasters in public primary schools in Tharaka South Sub-County, in your view, what do you think are the reasons for this concerning phenomenon?
- iv. Disaster awareness trainings are crucial in disaster awareness; help us understand how these aspects influence disaster preparedness in public primary school in this sub-county? (Probe on frequency of training e.g. regular drills, proportion of trained staff and pupils).
- v. Disaster awareness materials play various roles in disaster awareness; do these aspects influence disaster preparedness in public primary school in this sub-

county? (Probe on the number of emergency supplies, budget allocation for disaster preparedness resources and accessibility of the resources).

- vi. In your opinion, how significant are school disaster management policies in public primary schools? (Probe on disaster management plans, frequency of policy reviews and stakeholder involvement in policy development)
- vii. Is it appropriate for community participation in the disaster preparedness plans in public primary schools? (Probe on safety audits report, compliance with building codes and upgrades made to facilitate post-assessment)
- viii. Public primary schools typically face numerous challenges particularly in funding than secondary schools; to what extent does this fact explain the gap in the implementation of emergency plans and safety protocols in your school?
- ix. In your view, how have disaster awareness efforts enhanced the disaster preparedness in your school? (Probe on number of drills conducted annually, availability and number of first aid and emergency kits, pupil' awareness of basic emergency response practices)

Appendix V: Tharaka Nithi Map



Appendix VI: Ethics Review Letter



CHUKA UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE

Telephones: 020-2310512/18

P. O. Box 109-60400, Chuka

Direct Line: 0772894438

Email: info@chuka.ac.ke,

Website: www.chuka.ac.ke

25th April, 2025

REF: CUIERC/ NACOSTI/735

TO: Charles Nyaga Chabari

RE: Effect of Disaster Awareness Strategies on Preparedness in Public Primary Schools in Tharaka –Nithi County, Kenya

This is to inform you that *Chuka University IERC* has reviewed and approved your above research proposal. Your application approval number is *NACOSTI/NBC/AC-0812*. The approval period is 25th April, 2025 – 25th April, 2026.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *Chuka University IERC*.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *Chuka University IERC* within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *Chuka University IERC* within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to *Chuka University IERC*.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely


Dr. Benjamin Kanga
SECRETARY



Appendix VI: Post Graduate Introductory Letter



Knowledge is Wealth (*Sapientia divitia est*) Akili ni Mali

**OFFICE OF THE DIRECTOR
BOARD OF POSTGRADUATE STUDIES**

Telephones: 020-2310512/18
Direct Line: 020-268 7625

postgraduate@chuka.ac.ke

P. O. Box 109-60400, Chuka
Website: www.chuka.ac.ke

REF: AM20/29187/17

15th May, 2025

**Director
National Commission for Science Technology and Innovation
Off Waiyaki Way, Upper Kabete
P O Box 30623, 00100
Nairobi.**

Dear Sir / Madam,

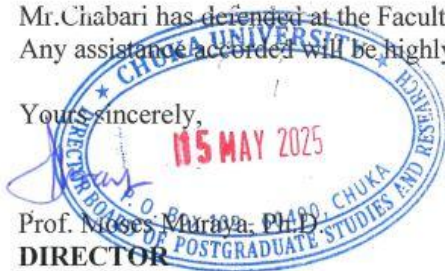
RE: CHARLES NYAGAH CHABARI

The above-named person is a *bona fide* student of Chuka University pursuing Masters in Community Development proposal titled: **Effect of Disaster Awareness Strategies on Preparedness in Public Primary Schools in Tharaka-Nithi County, Kenya.**

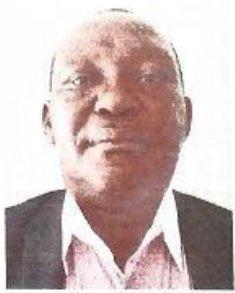
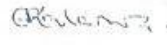
Mr. Chabari has defended at the Faculty level and is now expected to conduct research. Any assistance accorded will be highly appreciated.

Yours sincerely,


Prof. Moses Muriuki, Ph.D.
**DIRECTOR
BOARD OF POSTGRADUATE STUDIES**



Appendix 7: NACOSTI Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 556959	Date of Issue: 08/June/2025
RESEARCH LICENSE	
	
This is to Certify that Mr.. CHARLES NYAGA CHABARI of Chuka University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Tharaka-Nithi on the topic: EFFECT OF DISASTER AWARENESS STRATEGIES ON PREPAREDNESS IN PUBLIC PRIMARY SCHOOLS IN THARAKA-NITHI COUNTY, KENYA for the period ending : 08/June/2026.	
License No: NACOSTI/P/25/4174323	
556959	
Applicant Identification Number	Deputy Director NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
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