

**EFFECT OF CLOSED CIRCUIT TELEVISION (CCTV) SURVEILLANCE  
TECHNOLOGY ON SCHOOL SAFETY IN PUBLIC BOARDING SECONDARY  
SCHOOLS IN IGEMBE SOUTH SUB-COUNTY, MERU COUNTY, KENYA**

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**A Research Project Submitted in Partial Fulfillment of the Requirements for the  
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Department of Educational Communication and Technology**

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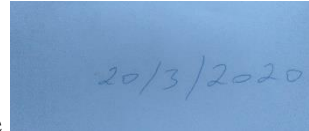
**MARCH 2020**

**Declaration**

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

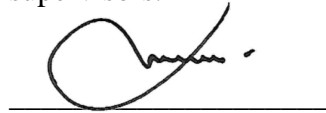


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## DEDICATION

This research project is dedicated to my parents Mr. and Mrs. Gitirime; my wife Modester and my children Sydney and Sydelle for their contribution to my success. May God bless them in a mighty way.

## ACKNOWLEDGEMENT

First and foremost I thank the Almighty God for granting me the strength, health and courage to complete this arduous task.

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## **ABBREVIATIONS AND ACRONYMS**

CCTV	Closed Circuit Television
CFS	Child Friendly School
FSE	Free Secondary Education
GOK	Government of Kenya
ICT	Information Communication and Technology
KRA	Kenya Revenue Authority
MoE	Ministry of Education
NACADA	National Agency for the Campaign against Drug and Substance Abuse
NACOSTI	National Council of science, Technology and Innovation
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children’s Emergency Fund

## **ABSTRACT**

Technology has influenced every sphere of human life, including education. Schools have continually used technology in various spheres of their operation around the world (Squelch, 2001). The purpose of the study was to investigate the effect of CCTV surveillance technology on school safety in public boarding secondary schools in Igembe South sub-county, Meru County, Kenya. Using a descriptive survey research design, the study sought to examine: the role of CCTV surveillance technology in student safety; the perception of students towards CCTV surveillance technology; and to find out the challenges faced in implementing CCTV surveillance technology in schools for safety. Interview schedules and questionnaires were administered to students, watchmen and principals to help gather the relevant data. The target population was 2416 respondents. The data was analyzed with the help of a computer program, SPSS version 23 and Microsoft Excel. From the analysis, the study established that all the schools were located in a safe area from both internal and external threats. The dormitories, toilets and near the fence were the most unsafe areas in the school. Schools had embraced CCTV surveillance as a measure of ensuring that every student enjoyed an environment that is physically safe, emotionally secure and psychologically enabling. The main role of CCTV surveillance technology was in deterring offenders and monitoring students' activities. The study established that CCTV surveillance cameras were perceived positively by a large number of students and the cameras were linked with keeping the school safe.

The challenges facing implementation of CCTV surveillance technology for school safety included: cameras breaking down, the CCTV system being expensive to maintain and inadequate personnel to man CCTV cameras effectively in schools. In order to make schools safe, there should be effective use of CCTV cameras. Other measures that were suggested included: proper fencing of schools, additional security personnel, improved discipline among the students, reducing teacher restrictions by encouraging teachers to be more friendly, proper screening of outsiders and parental involvement. Government should also finance public boarding secondary schools to acquire CCTV surveillance technology for safety.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Technology has influenced every sphere of human life. Education system has not been left behind. Schools have continually used technology in various spheres of their operation around the world (Squelch, 2001). On school safety, schools have embraced the modern technologies to track children and their activities and keep them safe, monitor and deter the outsiders who may intrude the schools illegally, provide evidence in case of criminal activity investigation in schools, protect school property from vandalism and monitor staff as they engage in their respective duties (Matthew, 2017). Some of the modern technologies used for this purpose include; Closed Circuit Television (CCTV), fingerprint identification, RFID (radio-frequency identification) chips and Entry control equipment like Remote – controlled door locks (Matthew, 2017).

According to Brooks (2017), schools have traditionally been kept safe by use of equipment like student/ staff IDs, visitor badges, parking stickers and palm scanners and employing so many security guards. In modern days schools have embraced other technology for safety in schools which include; communication technology like Two-way interaction system, alarm and protection systems like scream alarms, motion/sound/heat detectors, emergency alerts like Automated text messages or emails, school TV stations, voicemail systems and web sites with anonymous posts. Tracking systems like smart phone applications, GPS device to track students' movements, and lastly social media monitoring by use of automated scans of online content for bullying, threats, and evidence of self-harm are also some of the technologies used in schools for safety purposes. (Matthew, 2017). The most common of these modern technologies is the use of Closed Circuit Television (CCTV) surveillance technology.

Until the mid-eighties, the deployment of CCTV systems had largely been limited to private spaces (Hempel 2001). The appearance of these systems in settings typically considered 'public' is a more recent phenomenon and it is one which occurred with considerable alacrity in many countries. A diverse array of aims and objectives have motivated the introduction of CCTV into public spaces including; public safety, deterrence, enhanced detection and increased response times. In the contemporary context, the predominant uses of CCTV in public spaces are in the management of risks, traffic jams, fire, accidents and crime prevention (Hempel 2001).

According to Brown (1995), in larger metropolitan districts, CCTV had less impact upon personal crime. He says that within smaller market and towns, the number of assaults declined. Webb and Laycock found decreases in incidences of robbery in London Underground Stations that were smaller and less complex in their layout (Webb and Laycock 1992).

The Ilford study by Armitage et al., (1999) revealed a reduction in robbery and theft from the personal offences. On drugs, Burnley underwent significant reductions in the area covered by CCTV. Tilley (1999) suggested that CCTV leads to fear of crime. The ways in which CCTV will affect public space is determined, to a larger degree, by public response to the presence of the cameras. Most of his studies show a considerable degree of public support for CCTV systems. His study found that 67% of those interviewed 'did not mind' being observed by street cameras. A full 79% of those interviewed thought they would make people feel less likely that they would become victims of crime. Other studies have shown that even those who are profiled by the cameras are supportive.

A number of researchers have found that CCTV reduced levels of crime (Chatterton and Frenz 1994; Brown 1995; Mahalingham 1996; and Sarno 1996). Armitage suggests that the methodology

utilized to ascertain fear of crime levels should be questioned before conclusions are made (2002). However, small reductions in fear of victimization were apparent (Tilley 1999). In Glasgow, Tilly found that 72% of all those interviewed believed CCTV cameras would prevent crime and disorder.

The United Kingdom (UK) government has described CCTV as “vital” for detecting offenders (Porter 2016). Majority of British officers surveyed by Ashby (2017) believed that CCTV was a useful investigative tool. A report on the value of CCTV commissioned by Dyfed-Powys Police in Wales argued that cameras were valuable in the detection of crime, citing the opinions of police investigators and local prosecutors. Researches indicate that such scenarios replicate in a school setup since a school is a community made up of people from different backgrounds, races, tribes and nationalities.

According to Republic of Kenya, (2008) School safety Manual, Safety is an important aspect of human life that helps to mitigate risks in any given situation. In schools, safety is an integral and indispensable component of the teaching and learning process. However, safety can only be guaranteed, if some form of preparedness exists in the school system. Quality education to learners, can only be achieved if the school environment is conducive and safe enough for learning.

According to Shaeffer, (1999), a safe school is a child friendly school. A child-friendly school ensures every child an environment that is physically safe, emotionally secure and psychologically enabling. The ability of a school to be and to call itself child friendly is directly linked to the support, participation and collaboration it receives from families. Child- friendly schools aim to develop a learning environment in which children are motivated and able to learn, staff members

are friendly and welcoming to the children and attend to all their health and safety needs. (UNICEF, 2009).

School safety is viewed as one of the major factors that influence the implementation of a child friendly school. Squelch (2001) asserts that safe physical facilities play a pivotal role in actualization of child friendly school by satisfying the physical and emotional needs. CFS becomes effective when there is provision of safe and secure physical structures such as classrooms, which are well maintained, adequate sanitary facilities like separate toilets for boys and girls which are in good condition and also provision of emotional needs such as creating pleasant surroundings, a friendly atmosphere and inspiring environment. (Lupincci, 2002). This agrees with Kennedy (2003) who asserts that when learning is at the core of design priorities, there is significant likelihood that physical facilities will positively influence the performance. This perspective is also supported by Clark (2001) who pointed out that students who feel safe in school experience positive effect on their learning. However, School safety can be threatened by factors that emanate from within the school environment or externally from the wider community. It is therefore imperative that all the educational stakeholders take up the responsibility to ensure that school safety threats are minimized or eliminated so as to foster all round safe living in schools.

In Kenya, According to National crime research center (2017), incidences of student protest actions and violence in Kenyan secondary schools have been perennial and could be traced as far back as the beginning of the 20<sup>th</sup> Century when the first case was reported at Maseno School in 1908 (Republic of Kenya, 2001). However, the period from 1980s, through to 2000s saw an increase in both the frequency and intensity of student protests. Student protest actions became



acts of deadly violence targeting other students rather than more generalized protests against school conditions (Republic of Kenya, 2001). The late 1990s and early 2000s were marked by violent student protest phenomenon that often resulted in catastrophic school fires, rapes, loss of student lives and destruction of school property. The most unfortunate of these incidences was: in July 1991, male students at St. Kizito Mixed Secondary School in Meru County violently attacked their female students and set their dormitory on fire where over seventy girls were raped and nineteen killed (Kigotho, 2009). In another incident in May 1997, twenty-six female students at Bombolulu Girls Secondary School died in a dormitory fire suspected to be an act of arson by fellow students. In March 1999, students from Nyeri Boys High School locked up four prefects in their cubicle and burnt them up with petrol. In May 2001, a fire set by students at Kyanguli Secondary School in Machakos killed sixty seven students. All these cases had little or no evidence to pin down the culprits.

Therefore, Setting up programs to identify students who are potential threats to school safety is critical. Lord, (1999), and Del Prete, (2000). Several authors have carried out research and affirmed the need for safety measures and procedures in schools. Among them are Librera ( 2004), Trump (2005), Rono & Kyalo(2007), Lulua et al. (2007), Calefati (2009), & Boehlke (2010) but what is yet to be established is how the modern technology can be used to enhance this safety.

In Kenya, for instance, the government has attempted to address the problem of school safety by issuing schools with guidelines in the Safety Standards Manual, but the big question is “How far have the schools implemented the guidelines in this manual especially on effectiveness of CCTV on school safety?” There has been debates by education stake holders for schools to install CCTV

cameras. What is yet to be established is how this CCTV technology will influence the school safety as this enables students to focus on their studies without worrying about their safety, hence improved academic performance. Despite the importance of school safety, a new wave of mayhem has emerged in our society and the school has not been spared. There is an upsurge of violence arising quite rapidly. In some schools, students resort to senseless destruction, burning, maiming, raping or even killing those they think are harsh on them (Nderitu 2009). Six schools were torched in Meru County in 2018 alone leading to massive loss of property. Parents and government incur a lot of expenses in replacing the same (Daily Nation 2018).

Other than would be expected, if media reports are anything to go by, schools are the most unsafe places in Kenya. Headlines like “Here is why students are burning schools”(Daily Nation,2018); “School closed down following insecurity” (The Standard, 2018); “Terror a key threat to student safety” (The Star, 2018); “Drugs, alcohol, noise the greatest threat to school security” (Daily Nation, 2018); Shocking statistics of sex crimes in schools” (The Standard , 2018); “High school bullies take the game a notch higher, target Form ones with rich parents” (The standard, 2016) are becoming common in various media.

These reported incidences seem to present a picture of schools under a deluge of violence and crime. However, these incidents project only one aspect of the status of the safety at schools. Other incidents of concern, apart from violence and crime, include theft and vandalism in schools though not regularly reported. Eliason and Frank (2002) report that among other incidences, theft of property, fighting, physical violence and vandalism, bullying and intimidation, gangsterism and rape were major problems in schools they surveyed. What is common about these incidents is that

they all seem to have occurred in and around schools and mostly during school hours, which highlights the vulnerability of schools to safety-threatening incidents. This includes the case with which schools are accessed and intruded into by unsafe elements, sometimes with violent and criminal consequences.

### **1.2 Statement of the Problem**

School safety is an integral and indispensable component of the teaching and learning process. In fact, no meaningful learning and teaching can take place in an environment that is not safe and secure to both learners and staff. Hence it is crucial for education stakeholders to foster safe and secure school environment to facilitate increased learners' enrollment, retention, completion and hence quality education (Republic of Kenya, 2008).

Secondary Schools in Igembe South sub-county face a lot of challenges related to school safety. According to Daily Nation newspaper on 10<sup>th</sup> May 2019 for instance, one student lost his life after the dormitory was torched in Njia Boys Secondary school in Igembe South sub-county. Unfortunately, there was no evidence to link anyone to the incidence. Such incidences affect the school children leading to lack of concentration, high absenteeism and increased dropout rates which prevent children from realizing their full potential in education. It is a trouble which concerns all parents and guardians, students, educators, instructors, state officers, tax payers and workforce. This research therefore sought to investigate how CCTV surveillance technology affect school safety and hence help in creating child-friendly schools which ensures every child an environment that is physically safe, emotionally secure and psychologically enabling in public

boarding secondary schools in Igembe South sub-county as no research has been done on the same yet.

### **1.3 Purpose of the Study**

The purpose of this study was to investigate the effect of CCTV surveillance technology on school safety in public boarding secondary schools in Igembe south sub-county, Meru County, Kenya.

### **1.4 Objectives of the Study**

The specific objectives of this study were as follows:

1. To examine the role of CCTV surveillance technology in students' safety in schools.
2. To establish the perception of learners towards CCTV surveillance technology in school safety.
3. To find out the challenges faced in implementing CCTV surveillance technology for school safety.

### **1.5 Research Questions**

The study was guided by the following research questions:

1. What is the role of CCTV surveillance technology in students' safety in schools?
2. How do learners perceive CCTV surveillance technology in their school for safety?
3. What are the challenges faced in implementing CCTV surveillance technology in schools for safety?

### **1.6 Significance of the Study**

The study may help the school administrators and staff in finding ways of containing learners. The CCTV system will decrease incidences such as vandalism and theft, as it is now easy to identify the perpetrators. Students may be less inclined to cause trouble because of the solid documentation that the video recordings provide.

This research may help to reassure students to feel safe inside the school; they can concentrate on their studies without bothering on what could possibly happen to them while they are in school vicinity. We believe that the information obtained from this study may be useful to the school administrators as an evaluation of the implementation of the safety standards manual from the Ministry of Education, which requires schools to use the modern technologies to ensure schools are safe and child friendly. The study findings may be used to sensitize the school communities and make them realize the need to invest in safety programs in schools especially the modern technology. The findings would also benefit other scholars in the same field as a reference material.

### **1.7 Limitations of the Study**

Safety is a sensitive issue and therefore required a lot of effort to explain. Another limitation was the limited literature availability on CCTV surveillance systems in schools because most of the equipment and software are proprietary. Another limitation is that the conclusion of this study was based on three schools which represented 30% of the public boarding secondary schools in Igembe South sub-county.

### **1.8 Delimitation of the Study**

The research study was confined to Igembe South Sub-county in Meru County, Kenya. Caution must be taken when generalizing to all public boarding secondary schools in Kenya. The study involved the principals, watchmen and students of the sampled public boarding secondary schools as the respondents. The study was limited to effect of CCTV on school safety and did not highlight practices that apply to the wider school operations. The study also focused on few selected School Characteristics and therefore findings have to be generalized with caution to schools with similar characteristics.

## **1.9 Basic Assumptions of the Study**

In this study, the following assumptions were made: that there are likely to be safety breaches in human communities, that every school administrator and stakeholder knows about school safety and appreciates its need, that Respondents gave honest and reliable information as they responded to the items in the questionnaires and interview schedules.

## **1.10 Definition of Key Terms**

**CCTV:** Refers to electronic monitoring systems which makes use of video cameras, connected by means of a ‘closed’ (or non-broadcast) circuit, to capture, collect, record, and/or relay visual information about the event-status of a given space over time. It comprises of cameras, recorders and displays for monitoring activities.

**Deterrence:** Is an act of preventing something from happening.

**IP Network:** Is a computer network made of devices that support the Internet protocol.

**School safety:** It is the management of threats to people and property in public Boarding Secondary schools in Igembe south sub-county.

**Safe School:** It is a school in which students are sheltered from violence and bullying, as well as exposure to harmful elements such as drugs and gang activity.

**Surveillance Technology:** This is the technology used in observation of persons, vehicles, or activity taking place in an institution such as a school for the purposes of obtaining information regarding the activities and identities of the persons.

**Surveillance camera:** A mounted video camera used for purposes of surveillance, as part of closed-circuit television.

**Vandalism:** This is the ruthless destruction or spoiling of school property including defacement, graffiti and criminal damage.

**Student perceptions:** This is students' thoughts and beliefs about CCTV cameras use in their school.

### **1.11 Organization of the Study**

The study report is organized in five chapters. Chapter one consists of the introduction, which includes; background to the study, statement of the problem, purpose of the study, objectives, research questions, limitations, delimitations, definition of key terms and organization of the study.

Chapter two covers related literature reviewed, which consisted of: roles of closed circuit television in school safety, CCTV surveillance and school safety, indicators of a safe and child friendly school, perception of learners towards CCTV in their schools for safety, Human rights and surveillance, and challenges facing implementation of CCTV for school safety. Chapter three covers research techniques, which include research design, target population, sample size and sampling techniques, research instruments, validity and consistency of instruments, the procedures of facts collection and data analysis methodology. Chapter four presents analysis of data and interpretations while chapter five focuses on conclusions, recommendations, and areas for further research arising from this study.

## **CHAPTER TWO**

### **REVIEW OF THE RELATED LITERATURE**

#### **2.0 Introduction**

This chapter presented the overview of the existing literature from the past studies on CCTV and school safety. In so doing, the chapter started by reviewing the school safety and its importance, CCTV and student safety and benefits of CCTV in educational institutions. Other topics covered included: perception of learners towards CCTV technology in school safety and challenges facing implementation of CCTV for school safety. It also presents the theoretical and conceptual framework of the study.

#### **2.1 School Safety and its Importance**

Safety of the school refers to all measures taken to combat threats to people and property in educational environments. It also involves sheltering students from violence and bullying, as well as exposure to harmful elements such as drugs and gang activity, and also the risk of invasion from outside (Gottfredson, 2001).

School safety has become a growing concern due to recent changes in our society including terrorist attacks, gun crime, vandalism, arson, child exploitation and other issues prevalent in our society that put the safety of children, teachers, staff and parents at risk. In some schools, intruders can wander in and out of the premises as they please, as the access to buildings is not considered seriously enough within risk assessments. While some provisions are, for some establishments excessive (this is often dependent on the institution), such as metal detectors and bag checking which are now seen in some schools across the United States. Other basic measures like CCTV surveillance, perimeter walls and access security are an absolute necessity. Safe schools promotes the protection of students from violence, exposure to weapons and threats, theft, and the sale or



use of illegal substance on school grounds. School safety is linked to improved student and school outcomes. In particular, emotional and physical safety in school are related to academic performance (Hudson, 1999).

School safety affects all students in such a way that, the level of crime and substance abuse that a school experiences are correlated to school-wide test scores, graduation rates, and attendance rates. In schools with higher levels of collective hostility – as measured by students’ report of feeling unsafe, the presence of gangs, and fighting in between different groups of students, student reading achievement suffers. (Hudson. 1999)

He also argued that students and teachers have the right to feel safe and secure with the peace of mind that should a situation arise, they have the right security measures and procedures in place to keep themselves and those around them safe. Parents should also feel reassured with the knowledge that when their child attends school, they will be safe in the care of teachers and the security of the institutions. Now more than ever, action needs to be taken to ensure that schools are prepared for situations where someone may attempt to compromise that safety and that the right measures are in place to prevent them, one of them being installation of CCTV surveillance cameras (Lynch, 2017).

## **2.2 CCTV Surveillance Technology and School Safety**

Safety in school is a subject of widespread public concern. This is due to several violent and tragic incidents in schools in recent years which have alarmed parents with children of school age and caused horror and outrage within society at large. School safety is considered as an aspect of health and safety. As schools across the country assess and improve their safety procedures to meet such

incidents, they are discovering penalties in doing so. Parents while expecting their children to be safe and secure, also want to go into school to see their children's work, to talk to staff and to take part in school activities. The most common safety risks that are monitored using CCTV in schools are attacks on staff and pupils in school and its immediate vicinity, including assaults on teachers by aggrieved parents, drugs, and solvent abuse, trespassing on school grounds, arson, vandalism, burglary and theft of property (Hudson, 1999).

Use of security technologies in schools such as CCTV increases the safety of (or reduce the risk to) students, staff, and school assets, and prevents major disruptions to teaching and learning. Safety technologies, complement existing policies and procedures and assist staff in enforcing them, increases the chances of catching and identifying offenders. It discourages further security infractions and Reduce or eliminate the opportunities to commit such acts. Video cameras tend to promote a perception of safety and authority which contribute to the overall order maintenance of a school. (Hudson. 1999)

CCTV video recordings are useful when dealing with parents who may deny their child's guilt despite credible testimony. Parents will quickly accept their child's involvement in an incident when shown a CCTV footage (Carli, 2008). Video cameras may reduce some adult supervision requirements on school grounds. For instance, if cameras are covering a large area where students congregate during breaks, adults who normally would be assigned to oversee that area, may attend to other matters of concern. However, should an incident occur, a camera can only capture evidence, it cannot respond to or interrupt an incident in progress. (Carli, 2008)

### **2.2.1 Indicators of a safe and child friendly school**

According to the Safety Standards Manual for schools in Kenya (Republic of Kenya,2008), a safe school should have the following indicators: High rate of enrolled learners, strong focus on teaching and learning, reflected by better academic performance and all round character development amongst its learners. Visible strategies in promoting the rights of children as provided in the convention on the rights of the child and in children's Act; Active participation of community in school programs, visible presence of key stakeholders such as government officials, private sector representatives, religious leaders and representatives of Non-Governmental Organizations (NGOs) in providing material, psychological and spiritual needs of learners and staff. Adequate and well maintained facilities such as toilets and sanitation facilities; clearly demarcated school grounds with proper fencing and secure gates/boundaries; an environment free from drugs and substance abuse, trafficking and illegal hawking and low incidences of indiscipline. This research focused on how CCTV surveillance technology enhanced some of these school safety measures.

### **2.3 Roles of Closed Circuit Television (CCTV) Surveillance on Students' Safety**

The primary role of CCTV is considered to be the triggering of a perceptual mechanism that impacts on the offender's choice structuring properties in a manner that persuades them to abstain from crime (Ratcliffe, 2006). It combats anti-social behavior in a school environment. It enhances prevention of crime and disorder through deterrence (pizza, Caplan, and Kennedy, 2009). Nobody wants to be recorded on camera committing a crime. Students will point out the cameras to other students which will make everyone aware that their activities are being recorded. When students know that they are being watched, they are usually on their best behavior (Short and Ditton 1998).

Studies show that CCTV aids detection through its surveillance capability and the opportunity it may afford to deploy security personnel appropriately (Ratcliffe, 2006). CCTV provides public reassurance and therefore reduces fear of crime, which may in turn, increase the use of public spaces. (Bennet and Gelsthorpe, 1996; Tilley, 1997 who suggests that CCTV may reduce crime as people are deterred from visiting CCTV covered areas, believing them to be more dangerous). CCTV can also be used as a site management tool, for instance, for crowd control at football matches, or even in crowded areas like assemblies or when taking meals, in case a major incidence occurs, the information required will be available. (Federal Commission on school safety, 2018)

CCTV system technology can be used in both internal and external environments in schools to enhance surveillance and protect people (learners and staff), property, and vehicles-both for staff and visitors and their valuables. CCTV equipment can provide instant alerts when problematic trouble occurs, ensuring that crime against people, theft and vandalism are all substantially reduced and covered. When crime occurs, CCTV system incident recording can provide valuable evidence, improving the likelihood of a conviction and proper course of action (Ratcliffe, 2006).

CCTV surveillance help to deter sex offenders. By having highly visible surveillance cameras around the school helps to deter the presence of these criminals. CCTV cameras also decreases the chances of bullying on school grounds. This helps to provide a child friendly school for students to learn in. (Tilley, 1993).

The cameras aid in Emergency Evacuation. In case of an emergency such as fire or terrorist attack, surveillance cameras can show where the trouble spots are so that people can be directed in safe direction, by making sure that all students and other members have access to the security systems

alert feature, which makes it easy to notify them when something goes wrong. E.g. during terrorist attack CCTV surveillance also helps to eliminate unauthorized intruders. These are unscrupulous people who tend to prey on students because they see them as easy targets.

CCTV technology will help keep an eye on remote entrances/exits and out of limit areas. By having security cameras (with motion detection technology) in pre-selected areas, one will be instantly notified when movement is detected. One can have access to the security system through the computer, laptop, tablet, mobile phone or any other internet connected device. This helps to monitor any visitor who enters the school compound. (Federal Commission on School Safety, 2018)

CCTV can also be used to monitor students. For instance, those who are late or often violate the school rules. Being able to track students helps to determine how best to approach the issue. It also helps the management in monitoring staff. One can know who does their job right. Using video surveillance system can help one choose the right person for the right job. Security cameras also remind teachers that their professionalism and hard work is important and always being observed. (Ratcliffe, 2006).

CCTV security cameras provides a peace of mind to parents. With all the violent events that have occurred in schools, parents are more concerned than ever before. Parents need to know that their children are safe when they are at school. There are programs that allow parents to look in on their children in classroom during the day. This works well for both the parents and the school.

## **2.4 Perception of Students towards CCTV Technology in School Safety**

Perception involves the way one sees the world. It is the process of attaining awareness or understanding of sensory information. (Wikipedia, 2008). Perception of objects in the visual world is influenced by features such as shape and color as well as the meaning and semantic relations among them (Hwang, Wang, & pomplun, 2011). It involves conscious understanding of CCTV surveillance technology in schools.

More recent studies measuring public attitudes towards CCTV have been concerned mainly with public 'feelings of safety'. Some studies have drawn conclusions that CCTV makes people feel safer (Sarno et al, 1999). In any case, in order for people to feel safe, they need to notice the surveillance cameras (Ditton, 2002 and Charman, 1992).

A recent study from Arizona State University suggest that, schools equipped with indoor security cameras can make students feel less secure. In the official magazine of the NSC Congress & Expo. (2018), Researchers surveyed nearly 55,000 students from 98 middle schools and high schools in Maryland. Trained observers assessed the schools security measures, such as personnel and cameras. The researchers then examined "the association between school security officers and cameras and students perceptions of safety, equity and support," the study abstract states. Results showed that the students' perceptions of all three characteristics were lower in schools that made "greater use of security cameras" inside the building. Meanwhile, a "moderate level of security camera use" outside a school was linked to a greater level of safety.

They concluded that outside cameras and security may be perceived by students as safekeeping, whereas inside cameras may evoke feelings of being viewed as potential perpetrators who need surveillance.

Research suggest that perceptions of safety provided by CCTV surveillance cameras play an important role in their ability to succeed at school. Students who feel unsafe at school are less engaged in classroom activities and have high rates of absenteeism. Conversely, students who feel safe exhibit fewer depressive symptoms, have fewer conduct problems and are more likely to have positive peer interactions.

A study by Taylor (2011) which looked at “Awareness, understanding and experiences of CCTV amongst teachers and pupils in three UK schools” found that the rise of surveillance in schools represents a process whereby intense technological surveillance is normalized through habituation. That is, while students and teachers seemed to show initial qualms during the installation period and immediately afterwards, this soon dissipated as the cameras became part of everyday life. This changed attitudes towards CCTV as real life benefits and protection were being shown to outweigh paranoia and skepticism among law-abiding learners.

On the other hand, Learners may perceive security cameras negatively as they can instill fear to interact, speak and move freely. They feel everything is watched and they better try staying quiet over having fun filled day. Some students feel that school is the only time phase for them to bond with each other and learn things without fear. In case of camera, the connection between the teacher and students is destroyed.

#### **2.4.1 Human Rights, Surveillance and School Safety**

At present, when most information is spread and carried on a digital form, when communication technologies such as smartphones and free internet access ubiquity have become part of daily life, when commerce, health and financial services, education and entertainment, social platforms and

infrastructures are provided online and in real-time – contemporary life is increasingly moving on the direction of becoming a ‘transparent society.’ The new ways of collecting and handling information have ramifications throughout the society, as they mediate much private and public communication, interaction, and transactions. (Waldo et al, 2007). The current development of information technologies impacts human rights in several levels and has become a controversial subject of much debate. On terrorism and security, when conducted in compliance with the law, electronic surveillance can be an effective and operational tool for legitimate law enforcement in order to protect human rights.

Conversely, these technologies have become a threat to human rights by facilitating surveillance, interception and collection of personal data. One of the most discussed and worried about aspects of today’s information age is the subject of privacy. (Wado et al, 2007, 19). Relating privacy to human rights, scholars argue that, “privacy demands respect for a broad range of loosely allied personal interests: physical or bodily integrity; personal identity and lifestyle, including sexuality and sexual orientation; reputation; family life; the home and home environments.” (Herne Hill et al. 2009, 359). International law provides a legal framework on privacy. The human right to privacy and its protection is outlined in Article 12 of the Universal Declaration of Human Rights (UDHR) and with the same wording in Article 17 of the International Covenant on Civil and Political Rights (ICCPR): “No one shall be subjected to arbitrary or unlawful interference with his privacy, family, home or correspondence, nor to unlawful attacks on his honor and reputation. Everyone has the right to the protection of the law against such interference or attacks.” (UN 1948, 4; UN 1966, 10).



The Convention on the Rights of the Child (Article 16), as well as the International Convention on the protection of the Rights of ALL Migrant Workers and members of Their Families (Article 14), are legal documents which extend universally protection of one's privacy. (UN 1989, 5; UN 1990, 6). The multitude of supranational, international, state and regional laws, conventions and norms concerned the protection of privacy around the world indicate that individual privacy is a universally cherished value with significant social-political implications.

The nature of internet being borderless have seen different stakeholders having contradicting interest. Also the legislative processes are relatively low and law makers often lack a technological understanding (Bernal 2014, 82). Still these difficulties do not excuse foregoing the urgent need for more thorough regulation on privacy. Sisk argues that there is need for more and stronger privacy rights in our digital age (Sisk 2016, 101). Though concerns of individuals rights to privacy in the digital age have preoccupied analysts en masse since the early 2000's, Snowden's leak of NSA details on digital surveillance programs in 2013 have catalyzed a debate that very quickly escalated to the level of the United Nations.

#### **2.4 Challenges Facing Implementation of CCTV Surveillance Technology for School Safety**

According to Carli (2008) some of the challenges are: Inadequate resources, that is, Installation of CCTV cameras requires huge resources for its successful implementation. The cost of maintenance of the control room and coordination with security personnel requires additional resources for its effective operation in terms logistics. Band widths' for internet providers are expensive and inadequate. Use of fibre network for real time images require a lot of investment. Use of electric power to maintain the system is also expensive including standby generators which are expensive. The cost of equipment is also very high and requires huge investment. (Carli, 2008).

Most of the cameras are installed near buildings and don't monitor the outside environment leaving the students in the open away from surveillance. The inbuilt cameras are also located at the entrance of buildings leaving the other part of buildings not under any surveillance.

Ineffectiveness in conveying information. There is only one centralized monitoring room in schools. These only allow information to be passed from the control room to other officers. The officer in the field has no visual image of the suspect, at times this leads to the arrest of the wrong suspect. There is Lack of Specialized Personnel. School managers are just initially trained. However, with frequent transfers of school heads replacing them only learn how to operate the cameras through on job training. The managers therefore lack the necessary training to effectively perform their duties. (Carli, 2008).

Another major problem is tracing suspects from images by the security officers for arrest. This mainly happens because the officers don't have a data base with records (Biometrics) for tracing suspects on CCTV footage. The officers have to wait for help from the members of the school community or public by putting the images in the press which rarely leads to arrests of the suspects. (<https://reolink.com/school-security-camera-systems/>). Vandalism of Cameras is another big challenge. Cameras may get damaged by rogue students, staff or outsiders. When students interfere with the cameras or their cables, the functioning of the system is interfered with and hence less effective. This hampers the safety system in the school. Vandalism increases the cost of operation of the safety system. Legality and Privacy violation is a critical issue. People who protest installing of security cameras and systems for schools consider school security cameras as invasion of

privacy. Teachers and students would concern whether there are any hidden cameras installed somewhere they are not aware of, which would invade their personal privacy. (Carli, 2008).

## **2.5 Theoretical Framework**

This research was based on **Situational Crime Prevention Theory** which was developed by the British government's criminological research department in the mid-1970's (Clarke, 1995). Situational crime prevention (SCP) is an approach to crime prevention which "seeks to reduce opportunities for specific categories of crime by increasing the associated risks and difficulties and reducing the rewards" (Clarke, 1995). Situational crime prevention (SCP) perspective focuses on the more immediate opportunities for offending. It seeks to reduce the harms caused by crime through altering immediate or situational factors in the environment where crime regularly occurs. These conditions are the closest in time to crime events and thus can be much more responsive to manipulation (Smith and Clarke, 2012). SCP includes any opportunity reducing measure, whether design, management or even policing, intended to increase the difficulties or risk of offending. (Clarke, 1989). One of the examples of Situational crime prevention in effect is installing surveillance equipment in areas that experience a lot of vandalism, theft, antisocial behaviors like drug abuse, bullying among others.

The central concept of situational crime prevention is that crime can be prevented by altering the environment or the situation where offenses occur (Clarke and Homel, 1997). It is based on a rational choices perspective, that individuals make choices based on environmental cues (Clarke and Homel, 1997). SCP seeks to change how potential offenders perceive opportunity in a particular environment or specific situation.

The notion is that the offender makes a series of semi rational choices about personally profitable activities based on information processed from the environment (Brantingham 1993). SCP attempts to change the perceptions and information the potential offender processes regarding the gains, losses, and risk embodied in the situation. Thus, criminal opportunities in any targeted environment will be perceived as either having greater risk and/or requiring more effort. In practice, situational crime prevention draws heavily from the theoretical constructs of rational choice, routine activities, and lifestyles perspectives (Clarke and Felson 1993). According to Clarke (1997), CCTV operates as situational crime prevention mechanism. CCTV is introduced into the environment to reduce crime.

Clarke, (1997) classifies CCTV as a means of increasing the risk because CCTV operates by increasing the level of official surveillance at monitored locations. The decrease in crime can be evidenced by a general decline in deviance or a reduction in specific types of offenses in monitored areas. In my opinion, situational prevention can be used against all categories of crime since all crimes depend to some extent on opportunity, hence this theory was suitable for this research.

## **2.7 Conceptual Framework**

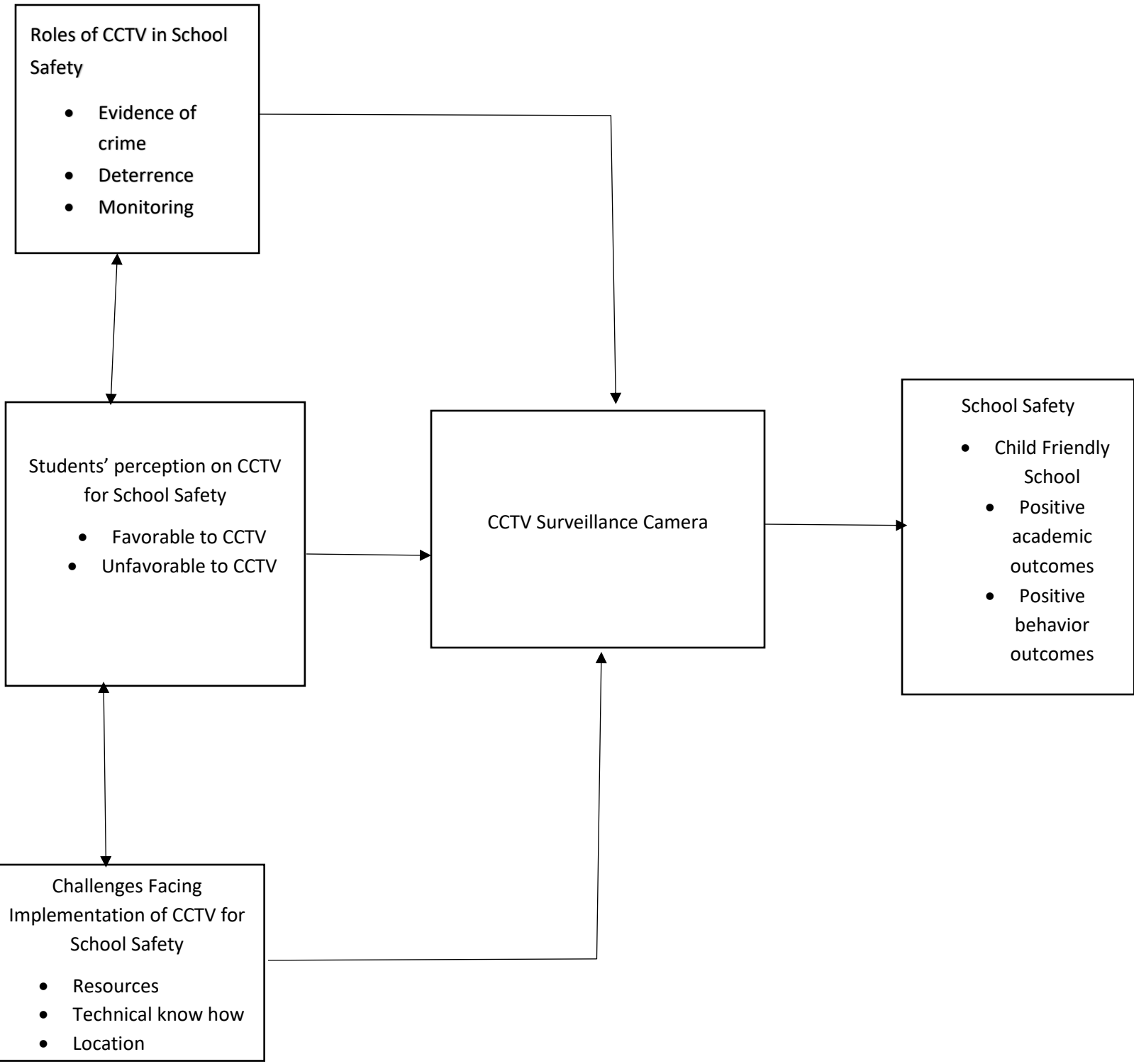
A conceptual framework is a hypothesized model identifying the conceptual or variable under study and showing their relationships. According to (Mugenda and Mugenda, 1999) a conceptual framework is a research tool used to help a researcher to develop awareness and understanding of the situation under investigation. This study was based on a conceptual model developed by the researcher so as to help identify the answers to the questions in the study.

Provision of safety is essential to the wellbeing of the school community and provision of quality education. However, available evidence shows that insecurity still persist in our schools causing

students and other school community members to fear. One key point in addressing the issue is lack of effective use of modern technology, that is, CCTV technology in ensuring safe, secure, and child-friendly schools.

In this study, this conceptual framework shows the relationship between variables of the study. The framework presents the factors that influence the effective use CCTV for school safety. The framework shows that the dependent variable which is the school safety is influenced by the roles that CCTV plays in school for safety, perception of learners towards CCTV surveillance technology and challenges facing implementation of CCTV technology in schools (independent variables). These independent variables have influence on dependent variable which is the school safety. This illustration is shown in Figure 1

**Figure 1: Conceptual Framework Showing Effect of CCTV on boarding public Secondary Schools**



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter covered the research design, target population, sample size and sampling procedures. It also include research instruments, validity and reliability of the instruments, data collection and data analysis plan together with ethical considerations put into place during the study.

#### **3.1 Research Design**

The study adopted a descriptive survey design. Kombo and Tromp (2006) define descriptive survey as a design in which the researcher gathers data at a particular point in time with the intention of describing the nature of existing conditions of or determining specific information. According to Mugenda, (1999), descriptive studies collect information by interviewing or administering questionnaire to a sample of respondents. Many questions can be asked about a given topic giving considerable flexibility to the analysis and it makes use of standardized questions where reliability of items can be determined (Gay, 2002).

Descriptive design was used for this study because it could be used when collecting information about people's attitudes and opinions on education or social issues. The study aimed at collecting information from principals, watchmen and students about the roles of CCTV surveillance technology in school safety, learners' perceptions towards CCTV for school safety, and challenges facing implementation of CCTV for school safety in public boarding secondary schools in Igembe South sub-county, Meru County, Kenya.

### **3.2 Target Population**

Target population is a population of interest from which the individual participant or object for the measurement is taken. According to Cooper and Schindler (2006) target population entails all cases or individuals that fit for specifically being sources of the data required in addressing the research. The target population for this research was all public boarding secondary schools in Igembe South sub-county. Igembe South sub-county comprises of 8 public boarding secondary schools, 4 boys schools and 4 girls schools, with 8 principals and 4800 students. The targeted population was from one who are relatively new in school and from four who have been in the school for some time, with a total population of 2400 students, 8 watchmen, and 8 principals. The total target population was therefore 2416 respondents.

### **3.3 Sampling Procedure and Sample Size**

A sample refers to a subject of a population, while sampling is a procedure, or technique of choosing a sub-group from a population to participate in the study. Ogula (2005). It is a systematic process of identifying many individuals for a study to represent the larger group from which they are selected. Simple random sampling and purposive sampling was used to select the respondents. Igembe south has got 8 public boarding secondary schools. According to Mugenda and Mugenda (2003), a sample of 10 - 30 percent of the respondents can be used to represent the target population.

In regard to this, the researcher sampled 30 percent of the public boarding secondary schools with CCTV surveillance technology in Igembe South sub-county by use of purposive sampling technique. Therefore the study encompassed 3 public boarding secondary schools of Igembe south



sub-county 2 for boys and 1 for girls. The sample population included 10% of students, that is, 240 students' selected using simple random sampling technique and 3 principals and 3 watchmen.

**Table 1: Sample size in relation to the population size**

<b>Categories of respondents</b>	<b>Population size</b>	<b>Sample size</b>
Principals	8	3
Watchmen	8	3
Students	2400	240
<b>Total</b>	<b>2416</b>	<b>246</b>

Table 1.1 sample size

<b>Categories of respondents</b>	<b>boys</b>	<b>girls</b>	<b>Total</b>
Schools	2	1	<b>3</b>
Students	160	80	<b>240</b>

### 3.4 Data Collection Instruments

Questionnaires and Interview schedules were used in data collection. Data analysis was done both qualitatively and quantitatively.

#### 3.4.1 Questionnaire

Kombo and Tromp (2006) states that a questionnaire is an instrument that gathers data over a large sample. Questionnaires are used in collection of a lot of data within a short period of time. Kerlinger (1973) states that the questionnaire elicits information on appropriate area to which respondents respond objectively.

The researcher used open-ended and closed-ended questions which enabled the researcher in balancing the quality and quantity of data collected from the students. These questionnaires were

used because the study was concerned with some variables that could not be directly observed such as views, opinions and attitudes of the respondents. Such data is best collected through questionnaires. Touliatos and Compton (1988). The respondent was assured of anonymity. There was one questionnaire for the students which inquired about the roles CCTV plays in school safety, their perceptions on CCTV on school safety and challenges facing CCTV implementation for school safety

### **3.4.2 Interview schedule**

According to Kombo and Tromp (2006), interviews are questions asked orally. Interview schedule is among the best method that involves direct verbal interaction with individuals. It provides depth data which is not possible to get using a questionnaire (Mugenda and Mugenda, 1999). The interview schedule was used to obtain data from principals and watchmen about roles of CCTV surveillance for school safety, Students' perceptions on CCTV for school safety, and challenges faced in implementing CCTV surveillance technology for school safety.

### **3.5 Validity of Instruments**

According to Orodho (2016), validity of instruments is the accuracy and meaningfulness of inferences which are based on the research. The instrument should be able to give accurate and relevant data for study. According to Best (1998) validity of instruments is that quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. The instruments were pre-tested to assess their validity. A pilot study was carried out in one school which was randomly selected in order to determine the suitability of the instruments. This school was not part of the main study.

Mugenda and Mugenda (2003) defines pilot study as a mini version of the study. One boarding public school, one principal, one watchman and 80 students were used in the pilot study. This represented the sample size as recommended by Mugenda and Mugenda (2003) that the pretest sample can be between one percent and ten percent depending on the sample size. The respondents were issued with questionnaires to fill. After the pilot, the instruments were fine-tuned before the main study to ensure validity with expertise guidance of the supervisors. Validity in the context of this study was also to be concerned with whether the objectives of the study were covered and represented by the items in the instruments which were established by the supervisors who helped in checking whether the content agreed with objectives of the study. Content validity of instruments was improved through expert judgment.

### **3.6 Reliability of the Instrument**

According to Mugenda and Mugenda (2003), Reliability is a measure of the degree to which a research instrument yields consistent results or data after trials. Reliability is also a measure of how consistent the results from the test are. (Kombo and Tromp, 2006). According to Orodho (1998), reliability concerns the degree to which the particular measuring procedure gives similar results over a number of repeated trials. An instrument is reliable when it shows consistency upon being used in many times in data collection. Bell (1993), observes that piloting is one way of checking reliability of instruments. Test retest technique was used to assess the reliability. According to Mwanje (2001), test-retest method is used to assess the consistency of a measure from one time to another. This research instrument was piloted at two different times to the same group to assess reliability.

Test retest reliability of 0.7 and above qualified the instrument for use in the study, Kerlinger (1983). The same views are shared by Orodho (2009), who states that a correlation co-efficient ( $r$ ) of about 0.75 should be considered high enough to judge the reliability of an instrument. A comparison of the responses was done. Pearson's product moment formula was employed to compute correlation co-efficient in order to establish consistency.

### **3.7 Data Collection Procedures**

This is the protocol followed to ensure that data collection tools are applied correctly and efficiently. (Mugenda and Mugenda, 2003). After the approval of the research proposal, the researcher obtained a letter of introduction from University of Nairobi in order to seek permit for research. He also sought permit from National Council of Science and Technology and Innovation (NACOSTI). The researcher also got a letter from the ministry of higher education through Sub-county Education officer giving authority to conduct the research before proceeding to the field. The school principals of the affected schools were requested by the researcher to cooperate through written letters three weeks before the study was taken. The researcher visited the schools and administered the questionnaires to students and interviews to principals and watchmen.

### **3.8 Data Analysis Techniques**

This is the process of examining data with the purpose of drawing conclusion about the information. According to Kombo and Tromp (2006), data analysis is examining what has been collected in a survey or experiment and making deductions and inferences. Therefore on completion of data collection, the researcher checked for completeness of the filled questionnaire and coded them. Data collected was analyzed based on descriptive statistics. Quantitative data

from questionnaires was analyzed manually by computing various statistics. Qualitative data was analyzed through thematic analysis then converted into a write up using coding categories related to research questions. Data was sorted, coded and keyed into Statistical Packages for Social Sciences (SPSS). Data was analyzed using descriptive statistics such as frequencies and percentages. The findings were presented in the form of tables and charts. Qualitative data was analyzed organizing the responses based on research objectives and questions. Lastly, the inferences, conclusions and recommendations were made in narrative form.

### **3.9 Ethical Considerations**

The researcher did not reveal the identity of the respondents, their school names or addresses and assured them of their privacy. The information given by the respondents through questionnaires and interview schedule was treated as private and confidential and only used for the study purposes. Respondents were required to voluntarily participate in the exercise.

## CHAPTER FOUR DATA PRESENTATION, INTERPRETATION AND DISCUSSION

### 4.1 Introduction

This chapter presents the findings, interpretations and discussion according to the objectives and research questions. The results from the field and the relevant sources were organized into tables, charts and graphs to bring out a more logical and meaningful image from the data gathered by the researcher. Data was then analyzed and interpreted which helped the researcher relate the research objectives with the assumptions and the reality on the ground. The study was specifically meant to unveil the following objectives: to examine the role of CCTV surveillance technology in student safety in public boarding secondary schools; to establish the perception of students towards CCTV surveillance technology in their school for safety in public boarding secondary schools and to find out the challenges faced in implementing CCTV surveillance technology for school safety in public boarding secondary schools in Igembe South Sub-County.

### 4.2 Response Rate for various Categories of Respondents

The sample consisted of principals (3), watchmen (3) and students (240). This summary is stated in Table 2.

**Table 2: Response rates of respondents**

<b>Category of respondents</b>	<b>Sample size</b>	<b>Frequency (F)</b>	<b>Percentage (%)</b>
Principals	3	3	100
Watchmen	3	3	100
Students	240	200	83
<b>TOTAL</b>	<b>246</b>	<b>206</b>	<b>83.7</b>

From Table 2, a total of 206 participants from the anticipated 246 respondents participated in the study representing a return rate of 83.7%. A questionnaire for students and two sets of interview schedule were used to collect data for the study. According to Kumar (2010), a response and return

rate of 50 percent is sufficient to conduct the study efficiently and, therefore it is a good response rate. This high response and return rate was as a result of the cooperative nature and willingness of the respondents to participate in the study.

### 4.3 Demographic Characteristics of Respondents

The study sought to find out the demographic information of the respondents respective to their gender, academic level of students and the duration of the principals' tenure in the school.

#### 4.3.1 Gender of the participants

In order to establish the gender of the participants in regard to CCTV and school safety, participants were requested to indicate their gender and the question elicited the following.

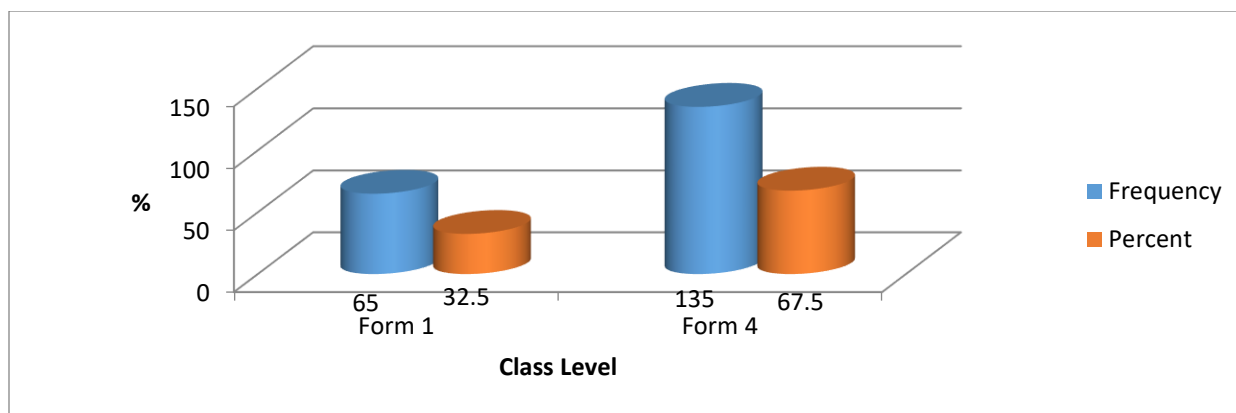
**Table 3: Gender representation of the participants**

Gender	Students		Watchmen		Principals	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Male	124	62	2	66.7	2	66.7
Female	76	38	1	33.3	1	33.3
<b>Total</b>	<b>200</b>	<b>100</b>	<b>3</b>	<b>100</b>	<b>3</b>	<b>100</b>

Table 3 shows that majority of the students were male 62% compared to 38% who were females. Majority of the principals and the watchmen in the secondary schools sampled were males at 66.7%. There was a male dominance among the students, watchmen and principals.

#### 4.3.2 Educational levels of the students

Students were requested to indicate their academic levels and the following feedback was obtained.



**Figure 2: Educational Levels of the Students**

Data depicted in Figure 2 show the class level of the students who responded, where 67.5% of the sampled students were in Form 4 and 32.5% were in Form 1. This shows that majority of those who responded to questionnaires were form 4s. This could be due to the fact that they had been in school for long and were aware and more interested in what was happening around them.

#### **4.3.3 Number of students and principals' tenure in office in the current school**

According to UNESCO (2000), the length of stay in one station is an indicator of stability of leadership in that station. However, while stability may be an advantage regarding school safety, it could also be a disadvantage if leadership is ineffective. Principals were asked about the number of students and their tenure in office in the current school and the question yielded the following feedback.

**Table 4: Number of Learners and Principals Tenures**

Number of students	Tenure of office		Years	Tenure of office	
	Frequency	Percent		Frequency	Percent
Below 500	-	-	Below 3 years	2	66.6
501 - 1000	3	100	4 - 6 years	1	33.3
<b>Total</b>	<b>3</b>	<b>100</b>		<b>3</b>	<b>100</b>

As seen in Table 4, all the secondary schools sampled had a student population of between 501 – 1000. This huge student population presented a safety challenge to the school and required close



monitoring in areas where students congregate in school in order to accord students adequate safety. Majority of the principals had been in the current station for a period of below 3 years.

#### 4.4 Roles of CCTV Surveillance on Students' Safety

The researcher was interested in finding out the role of CCTV surveillance cameras on the school safety from the participants. A question was posed to the students, watchmen and principals and the following feedback was received.

**Table 5: Role of CCTV surveillance on school safety by the respondents**

Role of CCTV	Students		Principals		Watchmen	
	Frequenc y	Percen t	Frequenc y	Percen t	Frequenc y	Percen t
Deterring offenders	4	2	2	66.7	2	66.7
Maintain discipline	8	4	-	-	-	-
Maintain safety	67	33.5	-	-	-	-
Monitoring students' activity	117	58.5	1	33.3	1	33.3
No use	4	2	-	-	-	-
<b>Total</b>	<b>200</b>	<b>100</b>	<b>3</b>	<b>100</b>	<b>3</b>	<b>100</b>

According to Table 5, the main role of CCTV surveillance technology indicated by the principals and watchmen was in deterring offenders (66.7%) while students noted it was for monitoring students' activities (58.5%). This finding conforms to the study by Ratcliffe, (2006) who established that the primary role of CCTV is considered to be the triggering of a perceptual mechanism that impacts on the offender's choice structuring properties in a manner that persuades them to abstain from crime. CCTV surveillance cameras combat anti-social behavior in a school environment. It enhances prevention of crime and disorder among students or unauthorized intruders who tend to prey on students because they see them as easy targets. Other roles included: maintaining discipline (4%) and maintaining general safety (33.5%). A few students (2%) noted

that the CCTV cameras had no use to the school safety. This small number of students who viewed CCTV having no use on school safety could possibly be attributed to students' negative perception and attitude towards CCTV surveillance as an avenue of revealing their hidden lifestyle and behavior in school. This revelation is in conformity to studies employing longitudinal national survey data that found that school security efforts were associated with decreases in perceptions of safety (Schreck and Miller, 2003 and Perumean-Chaney and Sutton, 2013). Conversely, research suggested students and faculty see physical characteristics, in particular school security officers and cameras, as important contributors to a safe school. Research findings from Taylor (2011) were in favor of the position taken by Schreck and Miller (2003) who observed that learners may perceive security cameras negatively as they feel everything is watched and they better try staying quiet over having fun filled day.

These findings suggest important differences in the influence of security measures on students' perceptions. Outside cameras and security may be perceived by students as safekeeping, whereas inside cameras may evoke feelings of being regarded as potential perpetrators who need surveillance. School administrators and policy makers in schools should carefully weigh the research evidence supporting the use of various security measures, including consideration of the location and extent of their use, and how those decisions may vary as a function of student and school contextual factors.

#### 4.4.1 Use of CCTV surveillance technology and school safety

Students and principals were required to indicate whether the use of CCTV cameras helped in making schools safer. This question yielded the following feedback from the students and the principals.

**Table 6: Use of CCTV camera and school safety**

Use of CCTV cameras and School safety	Principals		Students	
	Frequency	Percent	Frequency	Percent
A little	-	-	105	52.5
Not at all	-	-	30	15
Much	-	-	16	8
Very Much	3	100	49	24.5
<b>Total</b>	<b>3</b>	<b>100</b>	<b>200</b>	<b>100</b>

Data captured in Table 6 show that all principals stated equivocally that use of CCTV cameras helped very much in keeping the school safe. This revelation tend to concur with Hudson (1999) who concluded that video cameras tend to promote a perception of safety and authority which contribute to the overall order maintenance of a school. This position was contradicted by the students (52.5%) who indicated that the use of CCTV cameras helped a little in keeping the school safe. These findings contradict the findings of Sarah et al., (2018) that suggest that outside cameras and security may be perceived by students as safekeeping, whereas inside cameras may evoke feelings of being viewed as potential perpetrators who need surveillance. This position taken by students could be attributed to the fact that safety technologies complement existing policies and procedures and assist staff in enforcing them, increases the chances of catching and identifying offenders and cannot be a means to an end but requires support and collaboration from other players.

The study was also interested in establishing who else monitors the CCTV system for efficiency when principals were out of office. From the interviews and observations made by the researcher the following feedback was generated.

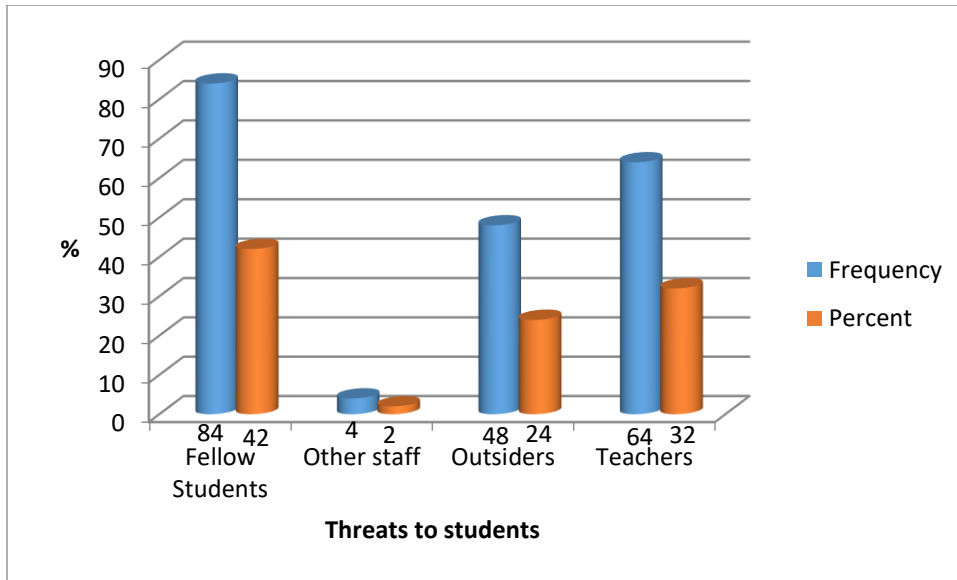
**Table 7: Monitoring of CCTV**

<b>Monitoring of CCTV system</b>	<b>Frequency</b>	<b>Percent</b>
Deputy Principals	2	66.7
ICT staff	1	33.3
<b>Total</b>	<b>3</b>	<b>100</b>

Data captured in Table 7 show that in most schools principals were assisted by their deputies (66.7) to monitor the CCTV surveillance system when they were not in office while 33.3% of the principals were assisted by their ICT staff members. This could be attributed to limited number of monitoring screens in the school and the school personnel involved in the exercise.

#### **4.4.2 Threats to students' safety in schools**

In order to ascertain the safety of students in schools it was absolutely necessary to establish threats to students' safety in school. Students were required to indicate the person whom they felt threatens their safety more in school and the following results yielded as seen in figure 3.

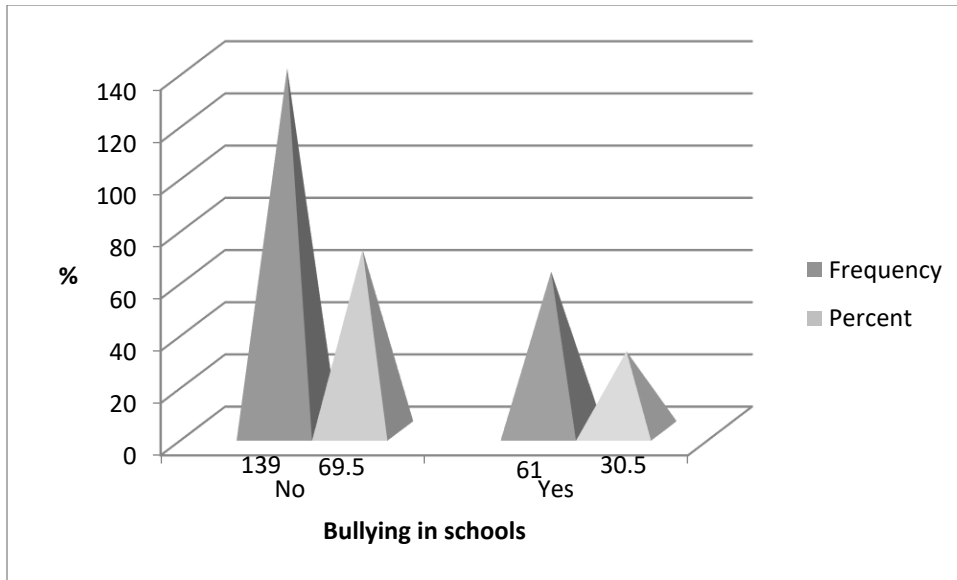


**Figure 3: Threats to students' safety in schools**

As seen in Figure 3, students felt that their safety in school was threatened by fellow students (42%) followed closely by teachers (32%) and outsiders (24%). From these revelations it was apparent students could be threatened by factors emanating from within the school environment or externally from the wider community. It was therefore imperative that all the educational stakeholders take up the responsibility of ensuring that school safety threats were minimized or eliminated so as to foster all round safe living in schools. Threats from fellow students could be due to incidences of bullying and from teachers could be as a result of corporal punishment in school which creates the need for proper surveillance in and outside the school.

#### **4.4.3 Bullying in school and CCTV technology**

The researcher was interested in establishing whether students had ever been bullied in school. Students were requested to indicate if they had ever been bullied in school and the question received the following feedback.



**Figure 4: Bullying in schools**

Data depicted in Figure 4 postulate that 69.5 % of students had not been bullied in school while 30.5 % had been bullied in schools. Though few students had once experienced bullying in school there was need for school administrators to tame bullying by sensitizing students on the negative effects of bullying, encouraging teachers to be on the lookout and installing CCTV cameras in areas perceived to be unsafe in schools in order to identify students who were potential threats to school safety. This finding resonated with the findings of Roy (2019) who established that when CCTV cameras were introduced to a high school in Sydney in Australia, there was a noted 70% drop in bullying and Hope (2009) who noted that bullying or other noncriminal social disturbances were likely to be affected by security cameras in the same way as criminal behaviors given that both would be met with disapproval.

#### 4.4.4 Areas manned by watchmen

Watchmen were required to indicate areas that they manned and the question elicited the following responses.

**Table 8: Areas manned by watchmen**

<b>Areas manned by watchmen</b>	<b>Frequency</b>	<b>Percent</b>
Dormitories	2	66.7
Gate	1	33.3
<b>Total</b>	<b>3</b>	<b>100</b>

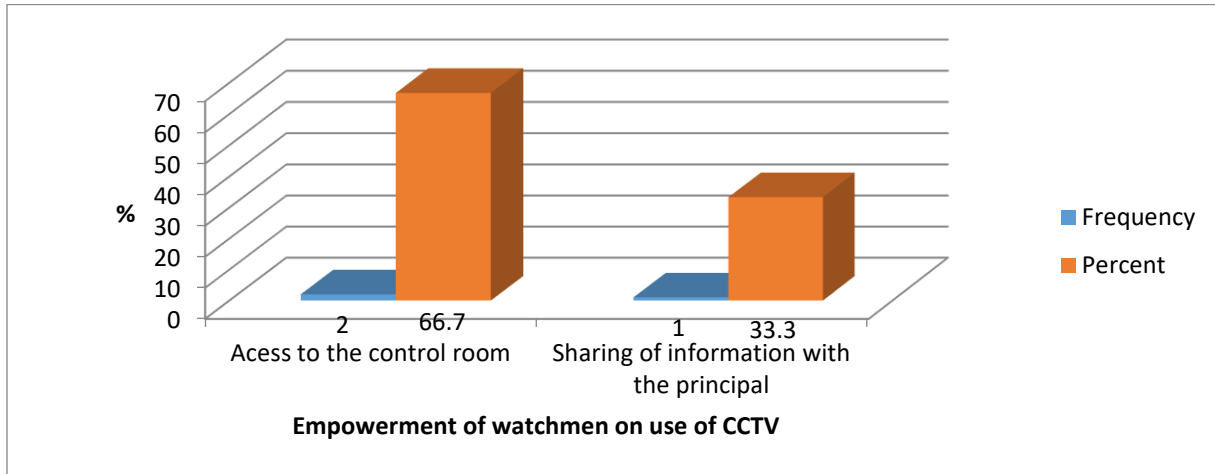
As seen in Table 8, dormitories (66.7%) and the gates (33.3%) were some of the key areas manned by watchmen in schools. Security personnel are mainly responsible for reporting incidents or suspicious behavior and contacting the authorities when necessary.

#### 4.4.5 Role of watchmen towards CCTV surveillance cameras in schools

The researcher established that CCTV cameras helped to compliment the work of the watchmen as they provided crucial information about the events that were happening around the school. Therefore, it helped watchmen to beef up security on certain areas that they realized had some safety threats to students. These findings tend to echo the findings of Tilley (1993) and Federal Commission on school safety (2018) who established that CCTV equipment can provide instant alerts when problematic trouble occurs, ensuring that crime against people, theft and vandalism are all substantially reduced and covered. The study also established that watchmen compliment the work of CCTV system, monitor the CCTV system and act on the activities captured in the system by alerting the authorities concerned.

#### 4.4.6 Empowerment of watchmen to use CCTV

Watchmen were requested to indicate how they were empowered to use CCTV cameras system and they gave the following feedback:



**Figure 5: Empowerment of watchmen to use CCTV**

Data captured in Figure 5 indicated that watchmen had access to the control room when principals are there (66.7%) and the principals share information on school safety (33.3%). The watchmen indicated that principals share school safety information with them so that they can take necessary action in ensuring that the school is safe.

#### 4.4.7 CCTV linkage with SMIS and ICT

Further, the study was interested in establishing whether the CCTV system was linked to SMIS in the school in order to help school authorities detect anything wrong or determine whether the person trying to gain access is actually the person authorized and if not, the system can generate an alarm. A question directed to the watchmen on the linkages of CCTV system with SMIS established that majority of the schools (66.7%) CCTV systems were not linked to SMIS.

Further the study sought to establish whether the CCTV systems were connected to other ICT technology and it was established that CCTV systems were connected to the ICT technology in



the school. Without a CCTV system linked to SMIS and ICT or other control systems, an intruder who should not have access to the school could get access by using a lost or stolen student' card. Though occupants may eventually notice intruders inside the school, the access control system itself wouldn't detect anything wrong.

#### 4.5 Perception of Students towards CCTV Surveillance Technology on School Safety

Students were requested to indicate their perception towards CCTV surveillance technology on school safety and the question obtained the following feedback.

**Table 9: Value of CCTV surveillance by students**

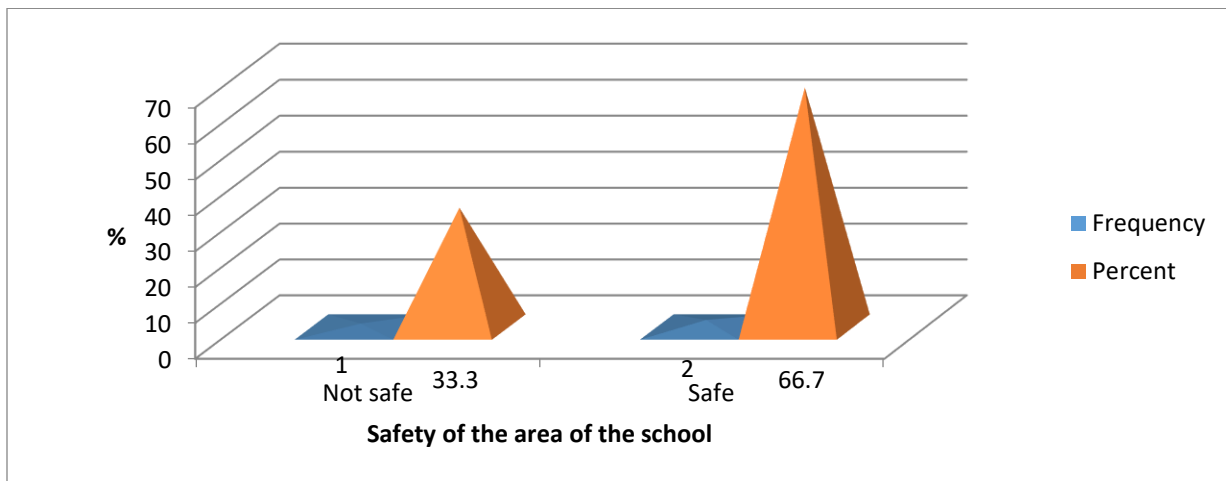
<b>Value of CCTV surveillance cameras</b>	<b>Frequency</b>	<b>Percent</b>
Better CCTV use	4	2
Bring comfort and safety	78	39
Improve security	66	33
Invade privacy	8	4
Lack of teacher-student trust	2	1
More CCTV cameras were needed	6	3
Not much helpful	20	10
Reduces indiscipline	16	8
<b>Total</b>	<b>200</b>	<b>100</b>

From Table 9, 39% of the students felt that CCTV system brought comfort or safety within the school compound; 33% felt that it has improved safety of the school, 8% felt that it has reduced indiscipline cases among students; 3% of the students felt that more cameras were required to cover all areas within the school. From these explanations it was clear that 83% of the students viewed the CCTV cameras positively and linked the cameras in keeping their school safe a finding that correlated with the findings of NSC Congress and Expo (2018) that concluded that outside cameras and security were perceived by students as safekeeping. However, a few students 2% felt that CCTV cameras should be used in a better way to enhance safety. 4% felt that their privacy

was being invaded especially by cameras installed inside the buildings, 1% indicated that it showed that teachers do not trust students and 10% of the students thought that the system was not very helpful. These findings were in sync with Taylor (2011) who established that learners may perceive security cameras negatively as they could instill fear to interact, speak and move freely. They feel everything is watched and they better try staying quiet over having fun filled day.

#### 4.5.1 Safety of the area where schools are located

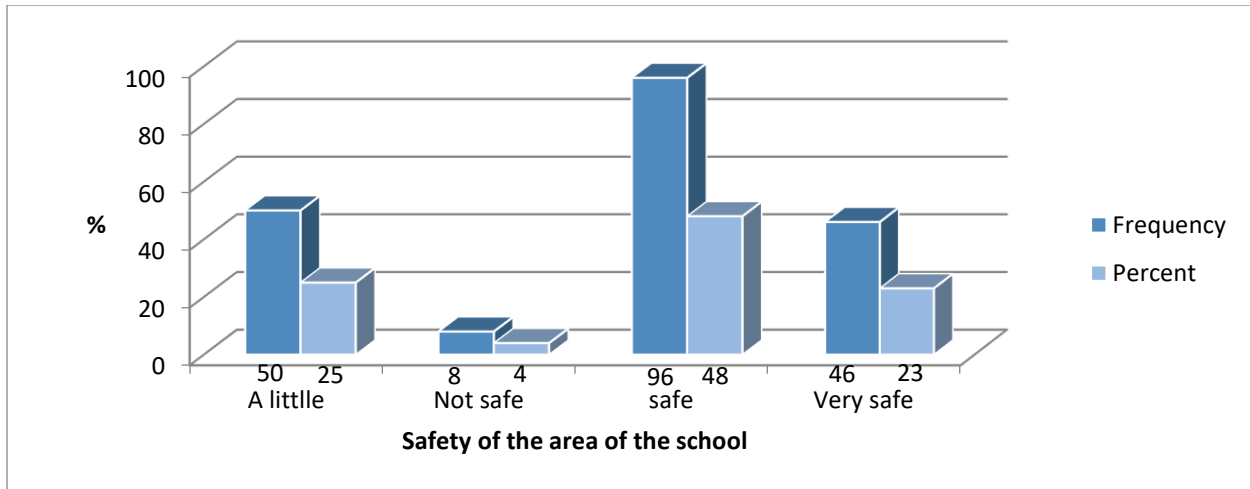
Principals were required to indicate safety of the area where the school is located. A question was posed to them and the following results realized.



**Figure 6: Principals' view of the area safety**

Figure 6 shows that 66.7% of the principals indicated that the schools were safe compared to 33.3% who indicated that the areas were not safe. Therefore majority of the principals indicated that the areas where schools were located were safe from both internal and external safety threats.

Further, the researcher was also interested in establishing students' view about the safety of their schools. Students were requested to state how safe their school was and the question yielded the following results as summarized below.

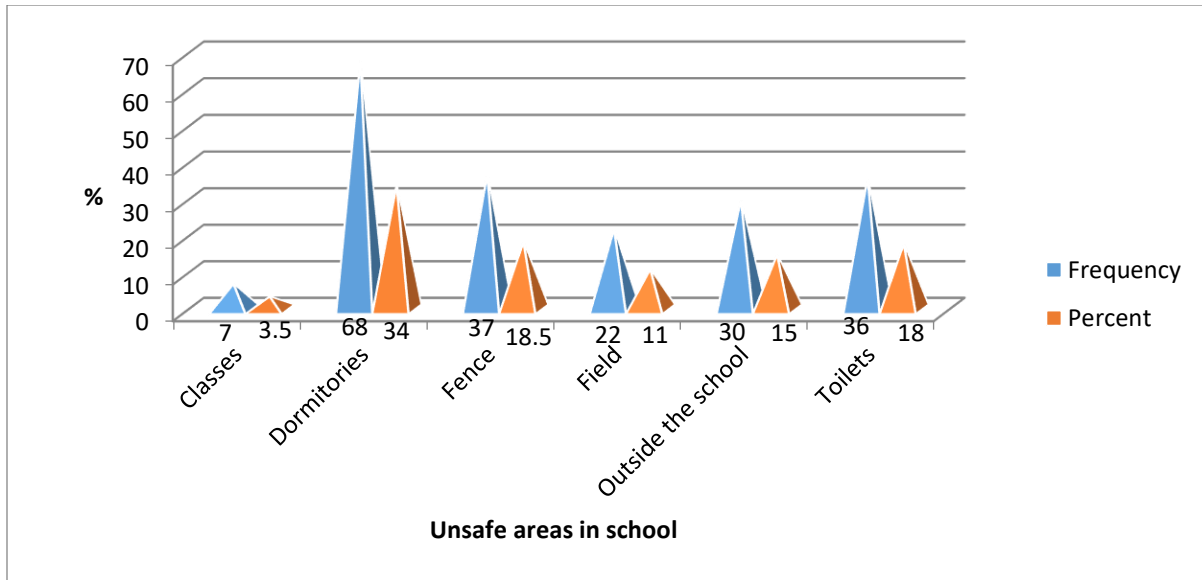


**Figure 7: Students' view of the safety of area of the school**

Figure 7 reveals that 48% of the students felt that the school was safe, 25% indicated that the school was a little safe while 23% revealed that the school was very safe. This result implied that most of the secondary schools in Igembe South sub-county were safe. When students feel safe in school they are more likely to experience positive effect on their learning.

#### **4.5.2 Unsafe areas within school and CCTV technology**

In order to curtail bullying and ensure students were safe in school there was need to identify areas where unsafe activities mostly occur within the school. Students were required to identify unsafe activities that mostly occur within the school and the question yielded the following.



**Figure 8: Unsafe areas within school**

Data depicted in Figure 8 show that the dormitories, toilets and near the fence were the most unsafe areas in the school with 49%, 18% and 18.5% respectively. Other areas which the students also felt were unsafe were the field at 11% and the classes at 3.5%. These areas require installation of CCTV cameras in order to reduce some adult supervision requirements. These findings tend to concur with the findings of Hope (2009) who noted that school security cameras are used in public spaces such as hallways, gymnasiums, and lunchrooms for controlling access to schools, controlling conduct within and outside schools, and gathering evidence in instances of crime or misbehavior. Installing cameras where they are not necessary will not provide any security benefit, but will cost and burden the school with additional maintenance work and legal responsibility.

#### **4.5.3 CCTV Surveillance technology in students' safety in schools**

In schools, safety is an integral and indispensable component of the teaching and learning process. Students' safety can only be guaranteed if some form of preparedness exists in the school system. The researcher was required to indicate presence of CCTV cameras in schools. It was observed

that majority of the schools visited had security cameras. This revelation clearly postulate that schools had embraced CCTV surveillance in schools as a measure of ensuring schools were students-friendly ensuring that every student enjoys an environment that is physically safe, emotionally secure and psychologically enabling. This finding concurs with the findings of Hope (2009); Perry-Hazan and Birnhack, (2016); and Warnick, (2007) who established that the use of school CCTVs in United Kingdom and worldwide was expanding and its purpose was classified into three categories: access control, concerned with protecting physical boundaries from external threats; conduct control, by real-time observations; and evidence gathering, for investigating disciplinary events. This calls for ethical analysis regarding the ways by which school CCTVs undermine an ethos of growth and the development of trust among learners in educational practices.

A question on how new students learn of CCTV cameras location in the schools yielded the following responses.

**Table 10: How new students learn of CCTV cameras location**

<b>How new students learn of CCTV cameras locations</b>	<b>Principals</b>		<b>Students</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Warning notices	-	-	8	4
Walls with cameras	3	100	165	82.5
Meetings	-	-	27	13.5
<b>Total</b>	<b>3</b>	<b>100</b>	<b>200</b>	<b>100</b>

As seen in Table 10, all the principals (100%) indicated that new students learnt of the CCTV cameras location when they see the cameras on the walls. Students noted that most of the new students (82.5%) learnt about the location of security cameras by seeing them on the walls, 13.5%

of the new students learnt about the cameras locations in students' meetings and 4% of the students learnt of the same through warning notices. It was apparent that new students learnt about the location of the CCTV cameras in school by locating the cameras on the wall a sign that the cameras installed in the school were not hidden from their view. The intention of the CCTV surveillance cameras was noble, the presence of the cameras was for their safety as reiterated by Sarno et al., (1999) and fully supported by the students, a finding that conformed with the findings of Tilley (1999) whose studies show a considerable degree of public support for CCTV systems. For schools that do choose to use security cameras, there is need for schools to institute guidelines for doing so in a way that minimizes potential negative effects. School administration should also sensitize students on availability of cameras with respect to their privacy.

#### 4.5.4 Students Rating of CCTV on School Safety

Students were requested to indicate the impact of CCTV on safety of their school. Six structured statements were incorporated with a scale ranging from Agree to Disagree. A 4-point Likert scale was employed, where 1 represented Agree; 2- Not sure; 3 – Disagree and 4 – No Response. The respondents' mean scores with the various statements had been worked out as shown in Table 11:

**Table 11: Students Rating of CCTV on School Safety**

<b>Impact of CCTV on safety of schools</b>	<b>Mean</b>	<b>Standard Deviation</b>
Our school is very safe	1.26	0.62
Students steal other students' property	1.18	0.19
I have been bullied by my fellow students	3.27	0.38
I feel that I am safe from external bad people	3.27	0.38
The school is safer because of the CCTV cameras	1.53	0.27
I feel that CCTV cameras invade my privacy	2.55	0.31

As seen in Table 11, many students stated that students steal other students' property as indicated by a mean of 1.18 despite of the installation of CCTV cameras in school. This called for the installation of CCTV cameras in all the areas including the dormitories and the classrooms, repositioning of the cameras and additional sourcing of CCTV cameras to ensure wider coverage of the sensitive areas in schools in order to curb the ever escalating rate of stealing in schools. Students further indicated that schools were safe (1.26) and were safer because of CCTV cameras (1.53). Students stated that with the installation of CCTV cameras they had not been bullied by their fellow students (3.27); and finally students were not sure on whether CCTV cameras invaded their privacy. This could be attributed to installation of CCTV cameras around the dormitories or other boarding facilities such as the toilets where students felt their privacy was being invaded; a finding that supported a recent study from Arizona State University (NSC Congress and Expo, 2018) that suggested, schools equipped with indoor security cameras made students feel less secure.

#### 4.5.5 Effectiveness of CCTV surveillance technology

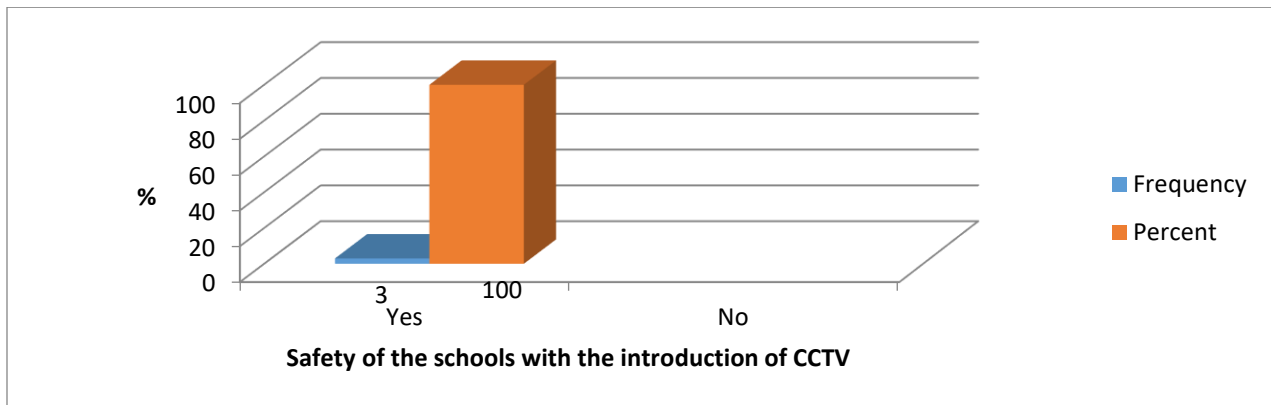
Principals were required to indicate the effectiveness of CCTV surveillance technology on school safety and the question received the following responses.

**Table 12: Effectiveness of CCTV Surveillance Technology**

<b>Effectiveness of CCTV surveillance technology</b>	<b>Frequency</b>	<b>Percent</b>
Little effective	-	-
Effective	2	66.7
Very Effective	1	33.3
<b>Total</b>	<b>3</b>	<b>100</b>

Table 12 shows that most principals (66.7%) considered CCTV surveillance technology as effective in ensuring the schools were safe.

Watchmen were required to indicate whether schools were safer with the installation of CCTV or not and the question received the following responses:



**Figure 9: School safety with CCTV**

Figure 9 show that all the watchmen indicated that the school was safer with CCTV cameras than before they were installed as indiscipline cases such as theft and bullying in school had reduced. Finding the right CCTV for schools is important to monitor motion that's detected in an area and record any goings-on. With modern systems, one can view what's happening on monitoring screens, mobile or tablet devices. Often these systems can trigger an alarm to be sent discreetly to security or staff in case of an intrusion. Installation of cameras in classrooms can intrude on students' privacy and can eventually lead to students hiding things from parents, feeling mistrust, becoming emotionally withdrawn and losing independence and autonomy.



Students were requested to indicate what causes the school to be unsafe and the following feedback was generated.

**Table 13: Lack of safety in the school**

<b>What causes the school to be unsafe</b>	<b>Frequency</b>	<b>Percent</b>
Inadequate use of CCTV Cameras	100	50
Harsh teachers	24	12
Inadequate security	50	25
Indiscipline	16	8
Outsiders	5	2.5
Poor fencing	5	2.5
<b>Total</b>	<b>200</b>	<b>100</b>

As seen in Table 13, there were a number of factors that stood out as the main contributors to lack of safety in the school; the most highlighted cause was the inadequate use of CCTV cameras (50%) in surveillance and monitoring. The other factors which were significant were inadequate security personnel (25%), harsh teachers (12%), undisciplined students (2.5%) and absence or incomplete fencing (2.5%). School safety is therefore an integral and indispensable component of the teaching and learning process that can only be guaranteed if some form of preparedness exists in the school system which could as well improve the perception of students towards CCTV in school safety.

#### **4.6 Challenges Facing Implementation of CCTV Surveillance Technology for School Safety**

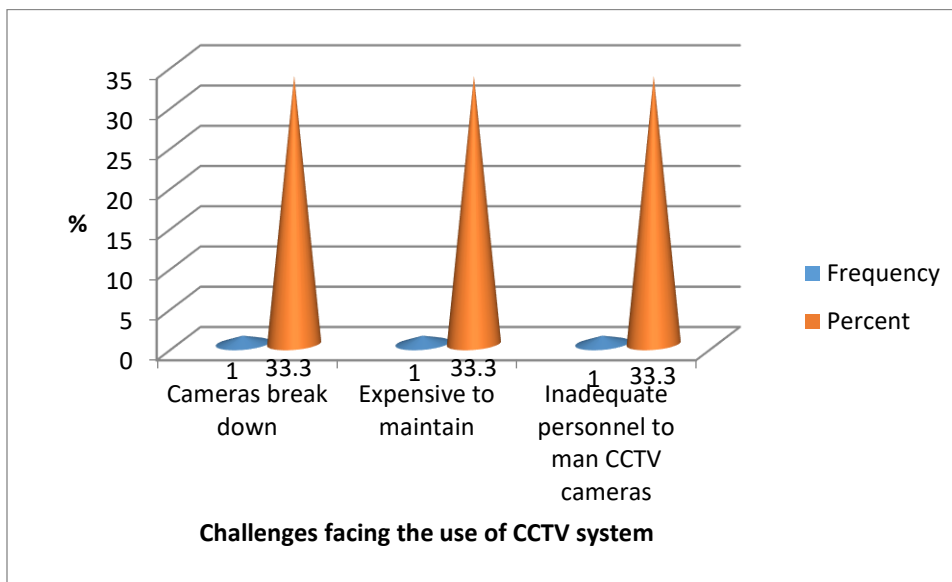
Installation of security technologies in schools such as CCTV faces a myriad of challenges. From the interviews, principals indicated that the installation of CCTV cameras required huge resources for its successful implementation; high cost of maintenance of the control room and coordination with security; high cost of equipment; and finally inbuilt cameras required strategic fixing to ensure effective surveillance. It was noted that CCTV systems cost over Ksh 200,000. Schools find this kind of an amount difficult to mobilize to cater for these installations. Though the

installation enhances students' safety, schools were yet to include such installations in their school budgets.

A cost of this kind was also extremely out of reach to a number of schools that had no allocations for this cost in their budget and this explained why cameras were not installed in all the key areas that students considered unsafe for effective surveillance in the schools. This challenge was also identified in a study carried out by Vivien (2008) who noted installation of CCTV cameras required huge resources for its successful implementation and maintenance in schools.

#### 4.6.1 Challenges facing the use of CCTV systems by principals

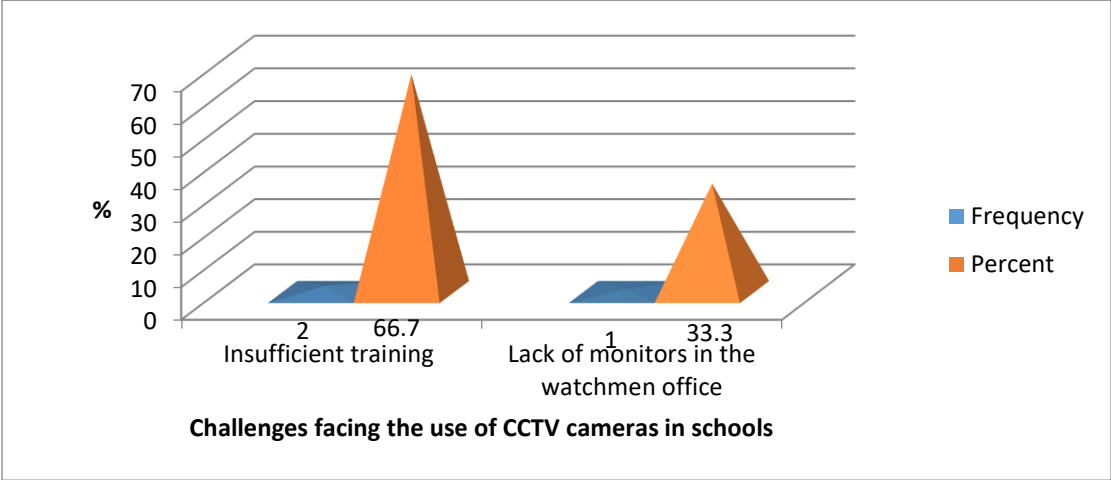
Further the study requested the principals to indicate the challenges CCTV surveillance systems were facing in schools and the question received the following feedback:



**Figure 10: Challenges facing the use of CCTV systems by principals**

Data in Figure 10 show that CCTV system faced a myriad of challenges including cameras breakdown, the system being expensive to maintain and inadequate personnel to man CCTV cameras effectively in schools for safety.

Further the study requested the watchmen to indicate challenges facing the use of CCTV systems in schools and the following feedback was obtained:



**Figure 11: Challenges facing the use of CCTV in schools by Watchmen**

Figure 11 shows that insufficient training and lack of monitors in the watchmen offices were considered the main challenges facing the use of CCTV surveillance in the schools for safety.

#### 4.7 Measures to Improve Safety in Schools

Students were requested to state how the school can handle the challenges experienced in the use of CCTV system and improve school safety. The following responses were obtained:

**Table 14: Measures to improve safety**

<b>Measures to improve safety</b>	<b>Frequency</b>	<b>Percent</b>
Additional security personnel	30	15
Effective use of CCTV	100	50
Fencing	40	20
Discipline among the students	10	5
Outsider screening	5	2.5
Parents involvement	5	2.5
Teacher restrictions	10	5
<b>Total</b>	<b>200</b>	<b>100</b>

According to Table 14, the students indicated that effective use of CCTV cameras (50%) would be the best measure to take to improve school safety. This agrees with Tilly's findings in Glasgow, where he found that 72% of all those interviewed believed CCTV cameras would prevent crime and disorder. (Tilly, 1999)

Other measures that were suggested included: proper fencing (20%), additional security personnel (15%), improved discipline among the students (5%), reducing teacher restrictions by being more friendly (5%), proper screening of outsiders and parental involvement (2.5%).

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents summary, conclusions and recommendations based on the findings of the study. The summary presents each part of the study in brief, conclusions are made for each research objective and recommendations are based on the general findings of the study.

#### **5.2 Summary of Findings of the Study**

The main aim of the study was to investigate the effect of CCTV surveillance technology on school safety in public boarding secondary schools in Igembe south sub-county, Meru County, Kenya. Using a descriptive survey research design, the study sought to examine: the role of CCTV surveillance technology in student safety, the perception of students towards CCTV surveillance technology; and to find out the challenges faced in implementing CCTV surveillance technology. The data was analyzed with the help of a computer program, SPSS version 23 and Microsoft Excel. From the analysis, the study found out the following: on demographic characteristics covered the study established that there was a male dominance among the students, watchmen and principals. Majority of the students who responded to questionnaires were form 4s. All the secondary schools sampled had a student population of between 501 – 1000. This huge student population presented a safety challenge to the school and required close monitoring in areas where students congregate in school in order to accord students adequate safety. Majority of the principals had been in the current station for a period of below 3 years.

### **5.2.1 Status of school safety and CCTV surveillance technology**

On the school safety, the study established that all the schools were located in a safe area from both internal and external threats. Students felt threatened by factors emanating from within and outside the school. It was therefore imperative that all the educational stakeholders take up the responsibility to ensure that school safety threats were minimized or eliminated so as to foster all round safe living in schools. Threats from fellow students could be due to incidences of bullying and from teachers could be as a result of corporal punishment in school which creates the need for proper surveillance in and outside the school. In addition, very few students had experienced bullying in school. The dormitories, toilets and near the fence were the most unsafe areas in the school. These areas require installation of video cameras to reduce some adult supervision requirements. The dormitories and the gates were some of the key areas manned by watchmen in schools and this made other areas unmanned to be unsafe calling for the need to install CCTV cameras to complement the work of the watchmen.

Schools had embraced CCTV surveillance as a measure of ensuring schools were students-friendly ensuring that every student enjoys an environment that is physically safe, emotionally secure and psychologically enabling. New students learnt about the location of the CCTV cameras in school through student meetings and by locating the cameras on the wall a sign that the cameras installed in the school were not hidden from their view; the intention of the CCTV surveillance cameras was noble, the presence of the cameras was for students' safety as reiterated by Sarno et al., (1999) and fully supported by the students a finding that conformed with the findings of Tilley (1999) whose studies show a considerable degree of public support for CCTV systems. Use of CCTV cameras had helped very much in keeping the school safe. This revelation tend to concur with Hudson (1999) who concluded that video cameras tend to promote a perception of safety and

authority which contribute to the overall order maintenance of a school. This position was contradicted by the students (52.5%) who indicated that the use of CCTV cameras helped a little in keeping the school safe. This position taken by students could be attributed to the fact that safety technologies complement existing policies and procedures and assist staff in enforcing them, increases the chances of catching and identifying offenders and cannot be a means to an end but requires support and collaboration from other players.

In most schools, principals were assisted by their deputies and ICT staff to monitor the CCTV surveillance system. This could be attributed by limited number of monitoring screens in the school and the school personnel involved in the exercise. CCTV surveillance technology was considered effective in ensuring the schools were safe. Inadequate use of CCTV cameras in surveillance and monitoring, inadequate security personnel, harsh teachers, undisciplined students and absence or incomplete fencing were considered as contributing causes of insecurity in schools.

### **5.2.2 Role of CCTV surveillance on students' safety**

On the roles of CCTV surveillance cameras the study established that the main role of CCTV surveillance technology was in deterring offenders and monitoring students' activities. Other minor roles included: maintaining discipline and maintaining general safety. A few students noted that the CCTV cameras had no use to the school safety. This small number of students who viewed CCTV having no use on school safety could possibly be attributed to students' negative perception and attitude towards CCTV surveillance as an avenue of revealing their hidden lifestyle and behavior in school. This finding conform to Taylor (2011) who established that learners may perceive security cameras negatively as they feel everything is watched and they better try staying quiet over having fun filled day.

Further the study established that CCTV cameras helped to compliment the work of the watchmen, they provide crucial information about the events that were happening around the school and it helped watchmen to beef up security on certain areas that they realize has some safety threats for the safety of the students. These findings tend to echo the findings of Tilley (1993) and Federal Commission on school safety (2018) who established that CCTV equipment can provide instant alerts when problematic trouble occurs, ensuring that crime against people, theft and vandalism are all substantially reduced and covered. Watchmen compliment the work of CCTV system, and act on the activities captured in the system by alerting the authorities concerned.

Despite the installation of CCTV surveillance cameras in schools; students continued to steal other students' property. This called for the additional installation of cameras in all the key areas, repositioning of CCTV cameras and additional sourcing of CCTV cameras to ensure wider coverage of the sensitive areas in schools to curb the ever escalating rate of stealing in school. Schools were safer because of CCTV cameras installations. Students stated that with the installation of CCTV cameras bullying by fellow students had been reduced; and finally students were evenly divided on whether CCTV cameras invaded their privacy. This could be attributed to installation of CCTV cameras around the dormitories or other boarding facilities such as the toilets where students felt their privacy was being invaded; a finding that supported a recent study from Arizona State University (NSC Congress and Expo, 2018) that suggested, schools equipped with indoor security cameras can make students feel less secure.



### **5.2.3 Perception of students towards CCTV surveillance technology on school safety**

On the perception of students towards CCTV surveillance technology on school safety in public boarding secondary schools, the study established that CCTV system brought comfort or safety within the school compound; it had improved safety of the school, it had reduced indiscipline cases among students; there was need for more cameras to cover all areas within the school. CCTV surveillance cameras were perceived positively by a large number of students and the cameras were linked with keeping the school safe a finding that correlated with the findings of NSC Congress and Expo (2018) that concluded that outside cameras and security were perceived by students as safekeeping. A few students noted that CCTV cameras should be used in a better way to avoid invading their privacy, it showed that students feel that teachers do not trust them and the system was not very helpful. These findings were in sync with Taylor (2011) who established that learners may perceive security cameras negatively as they could instill fear to interact, speak and move freely. They feel everything is watched and they better try staying quiet over having fun filled day.

### **5.2.4 Challenges facing implementation of CCTV surveillance technology for school safety**

On the challenges facing implementation of CCTV surveillance technology for school safety, the study established CCTV systems cost over Ksh 200,000; a cost that was extremely out of the reach for a number of schools and this explained why the cameras were not installed in all the key areas students considered unsafe for effective surveillance in the school. This challenge was also identified in a study carried out by Vivien (2008) who noted that inadequate resources, that is, installation of CCTV cameras required huge resources for its successful implementation and maintenance in schools. Two operators were used to operate the CCTV systems in schools thus

confirming the limited resources in installing adequate monitoring screens for effective surveillance in schools.

CCTV system faced a myriad of challenges including cameras breakdown, the system being expensive to maintain and inadequate personnel to man CCTV cameras effectively in schools. Insufficient training and lack of monitors in the watchmen offices were considered the main challenge facing the use of CCTV surveillance in the schools. In order to make schools safe, there should be effective use of CCTV cameras. Other measures that were suggested included: proper fencing of schools, additional security personnel, improved discipline among the students, reducing teacher restrictions by encouraging teachers to be more friendly, proper screening of outsiders and parental involvement.

### **5.3 Conclusions of the Study**

The following conclusions were made based on the findings of the study: On the school safety, the study established that all the schools were located in a safe area from both internal and external threats. The dormitories, toilets and near the fence were the most unsafe areas in the school. Schools had embraced CCTV surveillance as a measure of ensuring that every student enjoyed an environment that is physically safe, emotionally secure and psychologically enabling. On the roles of CCTV surveillance cameras the study established that the main role of CCTV surveillance technology was in deterring offenders and monitoring students' activities. Other minor roles included: maintaining discipline and maintaining general safety. CCTV cameras helped to compliment the work of the watchmen, they provide crucial information about the events that were happening around the school and it helped watchmen to beef up security on certain areas that they

realize has some safety threats for the safety of the students. Despite the installation of CCTV surveillance cameras in schools; students continued to steal other students' property.

On the perception of students towards CCTV surveillance technology on school safety in public boarding secondary schools, the study established that CCTV surveillance cameras were perceived positively by a large number of students and the cameras were linked with keeping the school safe.

On the challenges facing implementation of CCTV surveillance technology for school safety, the study established that CCTV systems cost over Ksh 200,000; a cost that was extremely out of the reach of a number of schools and this explained why the cameras were not installed in all the key areas students considered unsafe for effective surveillance in the school. Two operators were used to operate the CCTV systems in schools thus confirming the limited resources in installing adequate monitoring screens for effective surveillance in schools. CCTV system faced a myriad of challenges including cameras breakdown, the system being expensive to maintain and inadequate personnel to man CCTV cameras effectively in schools. Insufficient training and lack of monitors in the watchmen offices were considered the main challenge facing the use of CCTV surveillance in the schools. In order to make schools safe, there should be effective use of CCTV cameras. Other measures that were suggested included: proper fencing of schools, additional security personnel, improved discipline among the students, reducing teacher restrictions by encouraging teachers to be more friendly, proper screening of outsiders and parental involvement.

#### **5.4 Recommendations of the Study**

In order to enhance the use of CCTV surveillance technology on school safety in public boarding secondary schools in Igembe south sub-county, Meru County, Kenya, there is need to implement the following:

##### **5.4.1 The role of the government**

The Government through the Ministry of Finance and Ministry of Education should allocate adequate funds for acquisition of CCTV surveillance cameras in boarding schools in order to make them safe. The Ministry of Internal Security, Ministry of ICT with the assistance of Companies dealing with CCTV surveillance technology and Teachers Service Commission should organize training courses/capacity building for teachers in administrative positions, watchmen and ICT staff for effective use of CCTV surveillance Technology. The government through the Ministry of Finance and Kenya Revenue Authority should step in and subsidize the purchase of CCTV surveillance system by boarding schools in order to make them affordable.

##### **5.4.2 The role of the school administration**

The school through its BOM should mobilize funds for the acquisition of CCTV surveillance cameras. The BOM in conjunction with companies dealing with CCTV surveillance technology should sponsor watchmen for training of the utilization of the surveillance technology. The school administration should ensure that there is adequate monitoring screens in the school and the school personnel involved in the exercise are well acquainted with the technology for effective use of the system. CCTV cameras should be used in a way that avoids invading students' or members of staffs' privacy. There is need to reposition the CCTV cameras from indoor to out-door positions. Further, there is need for additional sourcing of CCTV cameras to ensure wider coverage of the sensitive areas in schools to curb the ever escalating rate of stealing and bullying in school. School administrators should ensure schools are properly fenced, there is additional security personnel,

improved discipline among the students, ensure teachers were friendlier to students and there was proper screening of outsiders and ensure there was parental and community involvement in school safety as additional complementary measures to the use of CCTV surveillance system in order to make schools safer.

#### **5.4.3 Students' Level**

Students need to be sensitized on the role CCTV surveillance play in enhancing school safety in order to address the negative perceptions towards the system as the cameras could instill fear to interact, speak and move freely.

#### **5.5 Suggestions for Further Research**

- i) The perception of teachers on the use of CCTV surveillance systems as a safety and monitoring tool in schools.
- ii) The effect of CCTV cameras on curbing crime in schools should be considered as an area for further research.
- iii) Displacement of crime after installation of CCTV cameras should be considered as an area for further research.

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**Appendices**  
**Appendix 1: Letter of Introduction**

Timothy Gitonga Peter

University of Nairobi

P.O Box, 92

Kikuyu

The principal,

Dear Sir/Madam

**REF: PERMISSION TO CONDUCT RESEARCH IN YOUR SCHOOL**

I am a post-graduate student at The University of Nairobi carrying out a research on ‘Effect of CCTV Surveillance Technology on School Safety’.

I humbly request you to allow me to complete the attached questionnaire and Interview schedules.

The response you provide will be only used for the study.

Thank you in advance.

Yours faithfully,

\_\_\_\_\_

Timothy Gitonga

E60/89911/2016

## **Appendix 2**

### **Interview schedule for principals**

Declaration: The information obtained is purely confidential and will be used for academic purposes only.

#### **Background Information**

1. Number of learners in your school.
2. How long have you been in this school?

#### **School Safety**

3. How is the safety of this area?
4. Over the past few months, have you witnessed or experienced any form of external or internal safety threats to school property within the institution?
5. If yes, how does it affect the school programs?

#### **CCTV Surveillance Technology and school Safety**

6. How did your school get a CCTV system?
7. How expensive is the surveillance system? a) ksh 60,000-100,000, b)100,000-150,000  
c) 160,000-200,000 d) over 200,000
8. How many CCTV operators does your school use in monitoring?
9. How effective would you say the cameras are?

Please explain.

10. Does the school have any other supplementary systems? a) occurrence book, b) physical watchmen security?
11. Practically, how long do you keep the data before you erase?
12. How do new students know there are CCTV safety cameras within the school?

- a) Students' guides      b) walls      c) privacy notices

**Roles and Challenges of Using CCTV in School Safety**

13. What roles does CCTV system play in keeping your school safe?
14. What challenges do you face in the use of CCTV system for school safety?
15. How do the school handle the challenges experienced in the use of CCTV for school safety?
- 16.** From your experience, what capabilities are required for school surveillance technology in future?
- 17.** How are other school administrators empowered for effective use of CCTV system?
18. What role do watchmen have in the CCTV system?
19. Who monitors the CCTV system when you are not in office?
20. Does the school have an SMIS?
21. If yes, is it linked to CCTV?
22. Is the CCTV system connected to other ICT technology? Please explain.
  
23. Any other comment on CCTV and school safety?

### Appendix 3

#### *Students Questionnaire*

Please read this questionnaire carefully and then complete it as honestly as possible. Your response will strictly remain confidential and used only for the purpose of this academic research. Please tick or respond as appropriate. Your identity is not required in this research.

#### **Background information**

1. Gender?      a) Male                      b) female
2. Class? a) Form 1                      b) Form 4

#### **School Safety**

3. How safe is your school? a)very safe b) safe c) a little safe d) not safe
4. What activities in and around the school do you think make your school unsafe?  
.....
5. Who do you feel threatens your safety more in school?  
a) Outsiders                      b)fellow students      c) teachers      d)other staff
6. Have you ever been bullied in school?      a) Yes              b) No
7. Where would you say unsafe activities do mostly occur within the school? a)classes  
b) Dormitories      c)Toilets      d)field              e)Near fences f) Outside the school

#### **CCTV Surveillance Technology and School Safety**

8. Does your school have security cameras? a)Yes b)No
9. How do new students know about the cameras? a) walls b) meetings c) warning notices
10. Do you think the use of Closed Circuit Television (CCTV) camera help in making your school safer? a) a little              b) much              c) very much      d) Not at all

#### **Students Perceptions on Surveillance Technology**

11. What is your feelings towards security cameras in school?

.....

**CCTV Roles in School Safety**

12. How are CCTV cameras used in your school?

.....

13. What is your rating of CCTV on safety of your school? (tick appropriately)

School Safety	Agree	Neither agree nor disagree	Disagree	No response
<ul style="list-style-type: none"> <li>• Our school is very safe</li> <li>• Students steal other students property</li> <li>• I have been bullied by my fellow students</li> <li>• I feel that I am safe from external bad people</li> <li>• The school is safer because of the CCTV cameras</li> <li>• I feel that CCTV cameras invade my privacy</li> </ul>				

14. Who is mostly served by CCTV for safety?

- a) Students                      b) Staff                      c) principal's office

15. Any other comment on school safety and CCTV? .....

## **Appendix 4**

### **Interview Schedule for Watchmen**

Declaration: The information obtained is purely confidential and will be used for academic purposes only.

#### **Basic Information**

1. Which area do you mostly man within the school?

#### **Student Safety**

2. Do students bully others in this school?
3. Have you handled cases of students stealing from each other? Please explain
4. Have you encountered any threat from outsiders trying to access the school illegally?

#### **CCTV and Student Safety**

5. In your own opinion, do you feel the school is safer with CCTV cameras? Please explain
6. Who operates the CCTV system?
7. How are you empowered for effective use of CCTV system?
8. How do you share safety information from CCTV with the school administrators?

#### **Roles of CCTV on School Safety**

9. Is CCTV of help in your job of securing the school? Please explain
10. What roles does CCTV play in keeping the school safe?
11. Are the cameras effective in keeping the school safe?

Please explain

#### **Challenges Faced in implementing CCTV for School Safety**

12. What challenges do you face in keeping the school safe by use of CCTV system?
13. Any other comment on CCTV and school safety?



## Appendix 5: Research Permit

 REPUBLIC OF NIGERIA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: <b>788144</b>	Date of Issue: <b>14 October 2023</b>
<b>RESEARCH LICENSE</b>	
	
<p>This is to Certify that Mr. Timothy Okene of University of Ibadan, has been licensed to conduct research to <b>study on the negative effects of closed circuit television (CCTV) surveillance technology on school safety in public secondary schools in Ikenne South sub-county, Ibadan City, Oyo State</b>, for the period ending: <b>14/December/2023</b>.</p>	
License No: <b>NA00075101008</b>	
<b>788144</b> Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Verification QR Code	
	
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