

**INFLUENCE OF PRINCIPALS' SANITATION MANAGEMENT PRACTICES
ON SAFETY OF STUDENTS IN PUBLIC SECONDARY SCHOOLS IN
KANGEMA SUB-COUNTY, MURANG'A
COUNTY, KENYA**

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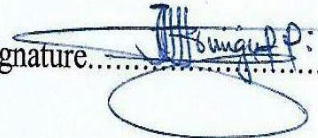
**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF MASTER
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LEADERSHIP AND MANAGEMENT OF
MOUNT KENYA UNIVERSITY**

JULY 2025

DECLARATION AND APPROVAL

Declaration by the Student

This research project is my original work and has not been presented in any other University or for any other award

Signature..........

Date.....4TH July 2025.....

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Approval by the Supervisor

I confirm that the work reported in this research project has been carried out by the candidate under our supervision.

Signature..........

Date.....4/7/2025.....

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DEDICATION

I dedicate this work to my parents, John Irungu Wangonya and Jane Wangari Irungu, for their continued support during my studies.



ACKNOWLEDGEMENT

I wish to express my deep appreciation for the indispensable support offered by Professor Pamela Ochieng' concerning the thorough revisions needed and her overall guidance in the crafting of this document. There are many to thank such as my friends and other participants who have contributed towards my project, The Debate, which spans several months of collaborative work. I must admit my intellectual indebtedness by acknowledging all the authors whose works, books, articles and research pieces I have accessed and formed a basis for my work. At last, let me record that express bonds of gratitude are due unto my lecturers and fellow cohort students at Mount Kenya University which I do most gratefully acknowledge.



ABSTRACT

Management of sanitation assures the protection of health and provides a safe environment in schools. Nevertheless, public secondary schools in the Kangema Sub-county still report cases of injuries, food poisoning, and even fatalities. This study aimed to evaluate the effects of principals' sanitation management practices on safety issues regarding students in public secondary schools located within Kangema Sub-county, Murang'a County, Kenya. Further goals pursued included exploring impacts arising from compliance with personal hygiene rules, handwashing protocols, toileting as well as waste disposal activities on the safety of students within those secondary schools. The study was guided by the theories of sanitation management and hygiene and safety. The overall approach was mixed methodology alongside concurrent triangulation research design. There were 1,463 respondents comprising 27 principals, 1,434 teachers, and two Sub-County Directors of Education (TSC & MoE). From this population a sample size of 312 was calculated using Yamane's Formula. Stratified sampling created five strata aligning with the number of zones in Kangema Sub-county. Four principals from each zone were selected through purposive sampling while all Sub-County Directors of Education were considered irrespective to selection criteria for this study. Nonetheless, from each zone, 58 teachers were identified through simple random sampling. This procedure achieved a sample of 20 principals, 290 teachers, and 2 Sub-county Directors of Education. Quantitative data from the teachers was collected through questionnaires while qualitative data from the principals and Sub-county Directors of Education was collected using interviews. To assess validity, reliability, trustworthiness and dependability of the research instruments piloted testing was conducted with 32 participants drawn from two secondary school public schools located in Kangema Sub-county. Validity was established using expert judgment while reliability was established through test-retest method. High internal reliability was observed with a significant Cronbach Alpha value ($r=0.725$). Credibility was ensured by means of data triangulation described as multi-faceted analysis while dependability is detailed reporting outlining every step involved in the collection process. Thematic analysis aligned to specific objectives guided qualitative data interpretation and the narratives formulated captured key findings whilst recounting them constructively. Quantitative results were processed descriptively through frequency tallies alongside percentage representation and inferentially via Pearson's Product Moment Correlation Analysis all analyzed using Statistical Package for Social Sciences (SPSS Version 25) where results were tabulated for ease of comprehension and review. The study found that the safety and security of learners in Kenya's public secondary schools poses major challenges because incidences like food poisoning, injuries, and other sanitation epidemics continue to occur. Initiatives to solve these problems have led school principals to adopt numerous enforcement policies on sanitation covering students' personal hygiene, handwashing, use of toilets, as well as waste disposal. These policies have not been successful. Therefore, the investigation recommends that instead, health policies framed around comprehensive hygiene needs gap analysis aimed at development should be tailored and enforced by the school heads. Also, they must ensure that students are compliant with the enforced handwashing etiquette. It is also necessary for them to make certain that schools maintain a sufficient ratio of toilets proportional to the student population alongside enforcing strict toilet usage policies and regulations. Finally, it remains important for these school reportedly continue supporting adherence by students to set procedures on waste disposal endorsed.

TABLE OF CONTENT

DECLARATION AND APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENT	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS AND ACRONYMS	x
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	3
1.3 Purpose of the Study.....	4
1.4 Objectives of the Study.....	4
1.5 Research Questions.....	5
1.6 Rationale of the Study.....	5
1.7 Significance of the Study.....	6
1.8 Scope of the Study.....	6
1.9 Limitations of the Study.....	7
1.10 Delimitations of the Study.....	7
1.11 Assumptions of the Study.....	8
1.12 Operational Definitions of Key Terms.....	9
CHAPTER TWO: LITERATURE REVIEW	10
2.0 Introduction.....	10
2.1 Empirical Literature Review.....	10
2.1.1 The Concept of Students' Safety.....	10

2.1.2 The Concept of Principals’ Sanitation Management Practices.....	13
2.1.3 Principals’ Enforcement of Personal Hygiene Practices and Safety of Students...	16
2.1.4 Principals’ Adherence to Handwashing Practices and Safety of Students.....	19
2.1.5 Principals’ Enforcement of Toileting Practices and Safety of Students.....	22
2.1.6 Principals’ Waste Management Practices and Safety of Students.....	24
2.2 Theoretical Literature Review.....	27
2.2.1 Sanitation Management Theory.....	27
2.2.2 Hygiene and Safety Theory.....	28
2.3 The Conceptual Framework.....	29
2.4 Research Gaps.....	30
2.5 Summary of Literature Review.....	31
CHAPTER THREE: RESEARCH METHODOLOGY.....	32
3.0 Introduction.....	32
3.1 Research Methodology.....	32
3.2 Research Design.....	32
3.3 Location of Study.....	33
3.4 Target Population.....	34
3.5 Sampling Procedures and Sample Size.....	34
3.6 Research Instruments.....	35
3.6.1 Questionnaire for Teachers.....	35
3.6.2 Interview Guide for Principals and Sub-county Directors of Education.....	36
3.7 Piloting of Research Instruments.....	36
3.7.1 Validity.....	37
3.7.2 Reliability.....	37
3.7.3 Credibility.....	37

3.7.4 Dependability.....	38
3.8 Data Collection Procedures.....	38
3.9 Data Analysis Procedures.....	38
3.10 Ethical Considerations.....	40
CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS.....	42
4.0 Introduction.....	42
4.1 Response Rate.....	42
4.2 Respondents' Demographic Information.....	43
4.2.1 Gender of the Respondents.....	43
4.2.2 Level of Education of Respondents.....	44
4.3 Status of Students' Safety in Public Secondary Schools.....	46
4.4 Principals' Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools.....	47
4.4.1 Inferential Analysis.....	51
4.4.2 Thematic Analysis.....	54
4.5 Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools.....	55
4.5.1 Inferential Analysis.....	59
4.5.2 Thematic Analysis.....	62
4.6 Principals' Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools.....	63
4.6.1 Inferential Analysis.....	66
4.6.2 Thematic Analysis.....	70
4.7 Principals' Waste Management Practices and Safety of Students in Public Secondary Schools.....	70

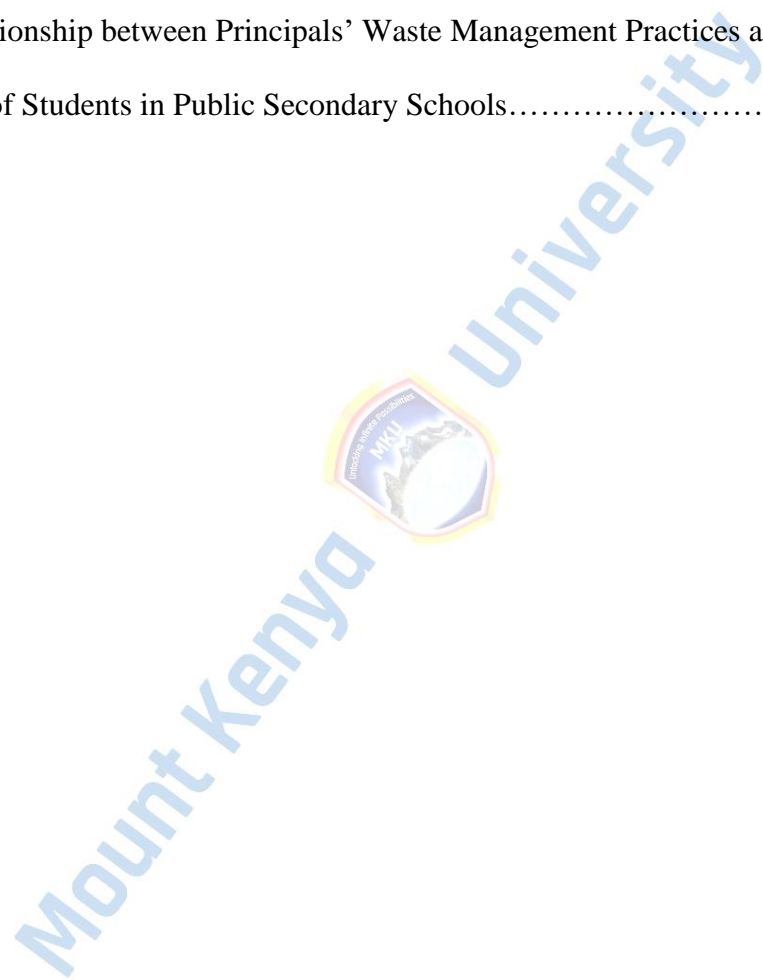
4.7.1 Inferential Analysis.....	74
4.7.2 Thematic Analysis.....	77
CHAPTER FIVE: SUMMARY, CONCLUSION AND	
RECOMMENDATIONS.....	79
5.0 Introduction.....	79
5.1 Summary of Research Findings.....	79
5.1.1 Status of Safety of Students in Public Secondary Schools.....	79
5.1.2 Principals’ Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools.....	79
5.1.3 Principals’ Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools.....	80
5.1.4 Principals’ Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools.....	81
5.1.5 Principals’ Waste Management Practices and Safety of Students in Public Secondary Schools.....	82
5.2 Conclusions.....	84
5.3 Recommendations of the Study.....	85
5.3.1 Recommendations for Practice.....	85
5.3.2 Recommendations for Policy.....	85
5.3.3 Recommendations for Further Research.....	86
REFERENCES.....	87
APPENDICES.....	94
Appendix I: Letter of Introduction.....	94
Appendix II: Informed Consent Form.....	95
Appendix III: Questionnaire for Teachers.....	96

Appendix IV: Interview Guide for Principals.....	100
Appendix V: Interview Guide for Sub-county Directors of Education.....	102
Appendix VI: Ethical Clearance from Mount Kenya University.....	104
Appendix VII: Introduction Letter from The School of Postgraduate Studies of Mount Kenya University.....	105
Appendix VIII: Authorization Letter from National Commission for Science, Technology and Innovation (NACOSTI).....	106
Appendix IX: Research Authorization from County Commissioner, Murang'a.....	107
Appendix X: Research Authorization from County Director of Education, Murang'a.....	108
Appendix XI: Map of Kangema Constituency Showing Kangema Sub-county.....	109

LIST OF TABLES

Table 1: Target Population.....	34
Table 2: Sampling Grid.....	35
Table 3: Data Analysis Matrix.....	40
Table 4: Response Rates	42
Table 5: Distribution of the Respondents by Gender.....	43
Table 6: Respondents' Level of Education.....	44
Table 7: Status of Students' Safety in Public Secondary Schools in Kangema Sub-county between 2020 and 2024.....	46
Table 8: Teachers' Views on the Influence of Principals' Enforcement of Personal Hygiene Practices on Safety of Students in Public Secondary Schools.....	48
Table 9: Frequency of Principals' Enforcement of Personal Hygiene Practices and Students' Safety in Public Secondary Schools.....	52
Table 10: Relationship between Principals' Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools.....	53
Table 11: Teachers' Views on the Influence of Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools...	56
Table 12: Frequency of Principals' Adherence to Handwashing Practices and Students' Safety in Public Secondary Schools.....	59
Table 13: Relationship between Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools.....	61
Table 14: Teachers' Views on the Influence of Principals' Enforcement of Toileting Practices on Safety of Students in Public Secondary Schools.....	63
Table 15: Frequency of Principals' Enforcement of Toileting Practices and Students' Safety in Public Secondary Schools.....	67

Table 16: Relationship between Principals’ Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools.....	68
Table 17: Teachers’ Views on the Influence of Principals’ Waste Management Practices on Safety of Students in Public Secondary Schools.....	71
Table 18: Frequency of Principals’ Enforcement of Waste Management Practices and Students’ Safety in Public Secondary Schools.....	74
Table 19: Relationship between Principals’ Waste Management Practices and Safety of Students in Public Secondary Schools.....	76



LIST OF FIGURES

Figure 1: The Conceptual Framework.....29



LIST OF ABBREVIATIONS AND ACRONYMS

CDC	:	Center for Disease Control
JCA	:	Joint Call to Action
JMP	:	Joint Monitoring Programme
KNBS	:	Kenya National Bureau of Statistics
MoE	:	Ministry of Education
NACOSTI	:	National commission for Science, Technology and Innovation
SHEP	:	School Health and Education Programme
SPSS	:	Statistical Package for Social Sciences
SWM	:	Solid Waste Management
UNEP	:	United Nations Environmental Programme
UNICEF	:	United Nations International Children's Education Fund
WASH	:	Water, Sanitation and Hygiene
WHO	:	World Health Organization
WSS	:	Water Supply and Sanitation

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter focuses on background to the study, statement of problem, purpose of the study, objectives of the study, research questions, rationale of the study, significance of the study, assumptions of the study, scope of the study, delimitations of the study, limitations of the study and assumptions of the study. It also provides a list of operational definitions of key terms used in the study.

1.1 Background to the Study

Student safety in school refers to a condition of feeling with themselves in physically, psychologically and emotionally ways. As stated by Cecilia (2013), student safety in schools offer a social and physical atmosphere that encourages appropriate behavior. The social climate is comprised of the norms, rules and their enforcement, and whatever support is required to allow students and adults to act appropriately. Nevertheless, for a number of years, incidents of unsafe schools have continually increased. In Venezuela, for instance, Cornacchia (2014) quotes that incidents of poor learner safety in schools are at 34.7% with incidents of injuries being at 45.3% and poisoning by foods at 23.1%. This shows that safety of students in school environments is of utmost importance with incidents of injuries and accidents remaining at a very high position. In other words, inasmuch as the schools are supposed to be fairly safe, the atmosphere of the school harbors its own risks and safety concerns.

With a view of combating this global challenge, attempts at enhancing public health at school have been carried by several stakeholders. In the world, the “Call to Action for WASH in Schools” campaign was officially launched in 2010. The significant program involved UNICEF and leading partners who invited decision-makers to step up

investments in the sector of safe water supply and sanitation issues at school (JCA, 2010). The ultimate aim was to grow water and sanitation (WASH) programmes at school to promote health, encourage learning and empower children to be change agents at home and in their society. Such a campaign was designed to concentrate efforts and resources strategically on core areas (JCA, 2010). This means sanitation activities are a collection of activities organized by secondary institutions with the aim of enhancing a better state of students' hygiene and health-friendly.

According to World Health Organization (2011), sanitation practices are a set of actions undertaken by school heads geared toward improving the quality of the environment and reducing the amount of disease. By doing so, the hope is that living conditions will improve and health problems decrease. The management of water, solid waste, industrial waste as well as the topic of air pollution and noise control, all fall under the broad concept of environmental sanitation. World Health Organization (2011) opines that such practices include, but not limited to, hand washing, toileting and waste management practices. However, the extent to which such management of these sanitation practices influence safety of students in public secondary schools still remains fully unexplored.

In Kuala Lumpur, for example, World Health Organization (2011) asserts that, despite the introduction of water, sanitation and hand hygiene practices in schools, cases of food poisoning and injuries to students still stand at 27.3%. In keeping with these assertions, UNICEF (2011) also indicates that sanitation and hygiene remains a challenge in many parts of the world. About 50% of the student population worldwide still lack improved sanitation facilities and over 884 million people still use unsafe drinking water sources. In many countries in Sub-Saharan Africa, issues of safety of students in secondary schools remain top in school programmes since there is

recognition that it is important to make sure that schools have adequate and safe water, hygiene and sanitary facilities. For example, a report by Nwakile, Eze and Okanya (2017) shows that the provision of school hygiene and sanitation facilities ensures the rights of students to acceptable hygiene practices, safe water supply, latrines and a healthy school environment in Nigerian schools. However, Nwakile et al (2017) reports that 88% of the burden attributable to unsafe water supply, sanitation and hygiene severely affects students in Nigerian secondary schools. In Kenya and Kangema Sub-county in particular, the scenario is the same with many concerns about safety of students in public secondary schools being on the rise. A report by the Joint Monitoring Programme (JMP) 2012 indicates that Kangema Sub-county is not on track to achieve the Millennium Development Goals (MDGs) target of 79% for sanitation coverage in schools.

As stated by JMP (2012), incidents of unsafe schools have continued increasing with 45.7% of student injury, 34.1% incidents of poisoning and 13.8% incidents of attack by sanitation-related ailments. In spite of these hazards, CARE International (2015) observes that the provision of access to adequate amounts of safe water, provision of facilities for sanitary disposal of excreta and introduction of good hygienic practice, are of critical importance in the minimization of the spread of diseases due to these hazards. Still, a lot remained to be done in order to examine the extent to which principals' sanitation control behaviors impact safety of learners in public secondary schools.

1.2 Statement of the Problem

Sanitation control measures implemented by principals are critical in promoting safe environment in public secondary schools for effective learning. In most public secondary schools in Kangema Sub-county, however, what is practiced is very different with cases of injury, poisoning and death still being reported.

As previously indicated in the background, JMP (2012) shows that incidents of unsafe schools have continued to increase with 45.7% of students' injuries, 34.1% incidents of food poisoning and 13.8% incidents of attack by sanitation-related diseases. This highlights a worsening state of students' safety in public secondary schools. Attempts that had been made to address these issues have not produced much significant achievement. In spite of these figures, very few empirical studies had questioned the degree to which principals' sanitation control practice shapes safety of students in public secondary schools, thus the necessity for this study.

1.3 Purpose of the Study

The purpose of this study was to assess the influence of principals' sanitation management practices on safety of students in public secondary schools in Kangema Sub-county, Murang'a County, Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives:

- i. To establish the influence of principals' enforcement of personal hygiene practices on safety of students in public secondary schools in Kangema Sub-county;
- ii. To find out the extent to which principals' adherence to handwashing practices influences safety of students in public secondary schools in Kangema Sub-county;
- iii. To assess the influence of principals' enforcement of toileting practices on safety of students in public secondary schools in Kangema Sub-county.
- iv. To examine the influence of principals' waste management practices on safety of students in public secondary schools in Kangema Sub-county.

1.5 Research Questions

The study was based on the following research questions:

- i. What is the influence of principals' enforcement of personal hygiene practices on safety of students in public secondary schools in Kangema Sub-county?
- ii. To what extent does principals' adherence to handwashing practices influence safety of students in public secondary schools in Kangema Sub-county?
- iii. How does principals' enforcement of toileting practices influence safety of students in public secondary schools in Kangema Sub-county?
- iv. To what extent do principals' waste management practices influence safety of students in public secondary schools in Kangema Sub-county?

1.6 Rationale of the Study

As indicated earlier, in many public secondary schools in Kangema Sub-county incidences of injury, food poisoning and death still being reported. A report by JMP (2012) points to the fact that cases of unsafe schools have been on the rise with 45.7% of injuries to students, 34.1% cases of food poisoning and 13.8% cases of attack from sanitation-related diseases. Thus, this study takes cognizance of the fact that proper sanitation is directly linked to students' health, preventing the spread of diseases such as diarrhea and respiratory infections. Proper sanitation enhances the health and performance of students by reducing absenteeism. In other words, knowledge of the existing sanitation practice assists in identifying gaps and weaknesses. Thus, with this study, policymakers and education managers at every level will be informed, hence putting in place the appropriate sanitation policies for a safe and conducive educational atmosphere for all students.

1.7 Significance of the Study

Students can benefit from the research because improved sanitation practice translates into better health, fewer absences, and improved attainment. Both boys and girls benefit from a cleaner, safer classroom. School principals and staff can benefit from better sanitation control because a healthier student body translates into fewer disruption and a more productive teaching environment. School staff themselves will also have improved working conditions, lowering their own risk of illness and generally improving their working lives. It could be helpful for parents and guardians because health and educational performance of their children could be better. Lowered medical costs along with the peace of mind of having their children in a healthy, safe environment benefit family well-being.

Broader school community could be helped by the spread of good hygiene behaviors that students learn. This can improve environmental conditions and public health outcomes. Schools with more appropriate sanitation can be examples for other facilities to bring about community-wide upgrades. Policy-makers working at the Ministry of Education can be assisted by the study to give important insights to them which can aid in the formulation and application of good sanitation policies. This helps in allocating the resources effectively by focusing on the most critical sanitation concerns in educational institutions. Academicians and researchers can be helped by the study since it can add to the knowledge of educational safety and sanitation management.

1.8 Scope of the Study

This was a case of a cross-sectional study carried out in public secondary schools of Kangema Sub-county. This study examined the effect of the sanitation management practice of principals on student safety in public secondary schools. Mixed methodology and accordingly applied concurrent triangulation of research design were used during

this research. Questionnaires were used in order to collect quantitative data from teachers whereas interview guide was used for collecting qualitative data from principals. This work was carried out during the period of February to April 2025.

1.9 Limitations of the Study

Problems facing the research were:

- i. Some respondents were unwilling to volunteer the correct information on the status of students' safety at school and sanitation practices adopted to mitigate the same for fear of victimization. In this case, the researcher appraised them on the objective of the study and were assured of confidentiality.
- ii. The location of the study lacks good roads with most of the sampled secondary schools being inaccessible by motor vehicle. In order to mitigate this, the researcher employed motorbikes to reach the sampled secondary schools in the rural areas.
- iii. Opening critical records of work on the safety and sanitation of students in public secondary schools was a great challenge for fear of being victimized. In this case, the researcher had explained to the managers of the school that the data were for only academic purposes and that the aim of the study was to add to their work on improving students' safety through improved work on sanitation in public secondary schools.

1.10 Delimitations of the Study

This work was guided by the following delimitations:

- i. Data were gathered from teachers and principals in this research.
- ii. The study focused on the influence of principals' enforcement of personal hygiene, adherence to handwashing, enforcement of toileting and waste management practices on safety of students in public secondary schools.

- iii. The researchers also limited the study to public secondary schools in Kangema Sub-county.

1.11 Assumptions of the Study

The study made the following assumptions:

- i. That safety of students has been a problem in most public secondary schools of Kangema Sub-county.
- ii. That the practice of sanitation management employed by public secondary school principals assists in the safety of learners.
- iii. That principals' personal hygiene, handwashing, observance of toileting and waste disposal habits influence students' safety in public secondary schools.
- iv. That the respondents were cooperative and gave voluntary truthful information.
- v. That the population sample for the study was a reflection of the whole target population

1.12 Operational Definitions of Key Terms

Enforcement of the Practice of Personal Hygiene: refers to a set of actions established by secondary public schools to implement policies, procedures, and educational programs aimed at encouraging and maintaining cleanness and health for the students and staff.

Enforcement of Toilet Practices: these are what public secondary schools do for the benefit of ensuring that their students' toileting occurs safely, hygienically, and respectfully. This is making it possible for the students to be comfortable and helped in their usage of the rest room facilities.

Handwashing Practice Adherence: refers to the extent to which students, instructors, and staff adhere on a regular basis to recommended handwashing guidelines for maintenance of hygiene and prevention of spread of contagious diseases.

Sanitation Management Practices: entail a number of measures, actions, and procedures implemented by public secondary schools for the maintenance of a clean, healthy, and safe environment for students, staff, and visitors. In the present research work, these encompass personal hygiene enforcement, handwashing adherence, toileting and waste disposal practice enforcement.

Students' Safety: refers to a set of measures and activities undertaken by public secondary schools to ensure the physical, emotional, and psychological well-being of students while they are on school grounds or engaged in school-related activities.

Waste Management Practices: refer to those activities which secondary schools undertake for the purpose of implementing measures for effectively minimizing, reusing, recycling, and appropriately disposing of wastage.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The researcher during this chapter displays the literature of the prior studies encompassed concerning the area of study of the researcher. Literature review based on empirical studies is grounded on the notion of safety of students, the notion of sanitation control measures of principals and the effect of principals' personal hygiene enforcement, handwashing adherence and toileting and refuse disposal control measures on safety of students. Divergent perceptions are provided by the researcher which are critical to a variety of writers who provided different versions concerning the researched issues. In addition, it displays conceptual and theoretical lenses and a literature review summary with a citation of gaps firmly established.

2.1 Empirical Literature Review

Empirical studies are discussed according to the notion of students' safety, the notion of principals' sanitation control behaviour and the impact of principals' personal hygiene enforcement, handwashing adherence, toileting and disposal control behaviour on students' safety.

2.1.1 Concept of Students' Safety

Students' safety encompasses a wide range of measures and considerations aimed at protecting students from harm of a physical, emotive and psychological nature in educational settings. Students' safety at school is a multifaceted and challenging issue for teachers who are more likely to be at risk of threats ranging from violence, robbery and arson. Safety administration is concerned with the safety of structures, individuals and products, and the protection of data, networks and telecommunications (Hughes, 2014).

The safe school and safety management concepts were presented by Donmez and Guven (2012) as environments in which learners, teachers and staff are physically, psychologically and emotionally safe, and in which broadened school programs develop learners' abilities. Stephens (2015) mentioned that safe schools allow teachers to teach and learners to learn in a warm and conducive environment where fear and menacing have no place, whereas Perone (2015) depicted safe schools as organizations where efficiency and learning matters for all, and in which learners are supposed to be successful and provided room to exhibit their social abilities.

These assertions attest to the fact that safe schools are places where teamwork is adopted as a policy, the school vision is clear, student and teacher expectations are valued, active cooperation from the environment is important, social activities abound, teachers and students are involved in the management decision-making processes, student success is targeted, and a rich library and multipurpose sports facilities exist. Safe schools implement effective instructional approaches, are aware of genuine student problems, and have a culture of respect and adequate physical equipment. These assertions are indicative of the fact that student safety is a multifaceted concept that encompasses physical, emotional, and psychological well-being within educational environments. The importance of ensuring a safe learning environment has been increasingly recognized in educational research and policy-making.

Research conducted in the United States of America by Cornell and Mayer (2018) defined physical safety as preventing violence, bullying, and other types of physical injuries on school grounds. Physical safety can be promoted by the application of security procedures, CCTV systems, and the deployment of security staff. According to Cornell and Mayer (2018), schools with rigorous security measures tend to report lower incidences of violence and bullying.

The study further established that infrastructure plays a critical role in physical safety since proper maintenance of school buildings, safe playground equipment, and secure access points are fundamental in minimizing accidents and unauthorized entries. Psychological safety is equally crucial for student well-being and academic success. This dimension of safety refers to the absence of psychological harm and the presence of a supportive, inclusive environment that fosters emotional well-being. On Maslow's hierarchy of needs, safety and security feelings give the basis for higher-order cognition and emotion development (Maslow, 1943). Bullying, harassment, and discrimination are very real threats to psychological safety at school.

In a study by Espelage and Swearer (2014), the psychological toll of bullying in the longer term is reported to be depression, anxiety, and lower academic performance. Bullying programs run by comprehensive schools which develop a culture of respect and openness are shown by Olweus (2016) to be correlated with higher psychological safety. In the majority of Sub-Saharan Africa, concept of students' safety is viewed to be critical to their performance at school. In Kenya, for example, the government laid down a series of policies aimed at encouraging students' safety at school. In its Basic Education Act of 2013, a comprehensive legal framework for the protection of children at places of learning is set out. This act imposes a requirement on institutions of learning to ensure a safe environment for students and lays down the responsibilities of various actors, including the state, school leaders, teachers, and guardians.

In Kenya, the Ministry of Education also laid down clear guidelines, for example, the Safety Standards Manual for Schools in Kenya (2008), which stipulates meticulous guidelines on how institutions of learning can ensure the safety and health of learners. In its safety manual, a host of safety issues, including infrastructural conditions, disaster preparedness, health and hygiene, and prevention of abuse and violence, are discussed.

Despite these policies, a series of issues affect the effective implementation of safety provisions in institutions of learning in Kenya. In Kangema Sub-county, for example, a case carried out by Wambui and Mbugua (2022) reported that cases of bullying by students at Kangema Sub-county were on record to be rampant, and these affect students' mental health and performance. However, much remained to be done regarding exploring a host of factors and means of safety issues on students at public secondary schools.

2.1.2 The Concept of Principals' Sanitation Management Practices

Sanitation management practices are critical in ensuring public health, environmental sustainability, and overall quality of life. Effective sanitation involves the collection, treatment, and disposal of human waste in a manner that minimizes health risks and environmental impact. This literature review explores various aspects of sanitation management practices, including historical developments, current strategies, challenges, and innovative solutions. According to Rosen (2015), sanitation has evolved significantly over centuries. Sanitation in schools encompasses the provision and maintenance of facilities for safe drinking water, handwashing, and disposal of waste.

WHO and UNICEF (2020) highlight the significance of Water, Sanitation, and Hygiene (WASH) in schools for creating a healthy learning environment. Access to appropriate sanitation facilities is associated with better health for students, less spread of infectious diseases, and better educational performance. Evidence of the effects of good sanitation management on health and education is compelling. Better sanitation facilities in schools result in a sizeable decline in waterborne and sanitation-related illnesses. This, in turn, decreases absenteeism and improves the ability of students to focus and deliver academically. A UNICEF (2018) report showed that schools with good WASH facilities had better attendance rates, especially for girls.

Separate sanitation facilities for girls are very important in maintaining their regular attendance and participation in school, especially during menses. This shows that sanitation control technologies have progressed a great distance from ancient sewage systems to contemporary wastewater treatment technologies. However, realizing universal access to safe sanitation is a great challenge. For instance, a joint JMP report indicates that respectively, more than 10% and a third of the world's population lack access to safe drinking water and improved and adequate facilities of sanitation (WHO, 2019). These engender one of the world's most vexing environmental menaces; open defecation (World Health Organization, 2019). As WHO (2019) estimated, globally about 2 billion individuals lack basic facilities of sanitation. In accordance, WHO (2015) revealed that in developing countries, the proportion of those who lack access to improved sanitation facilities and safe potable drinking water is notably higher.

For instance, in Sub-Saharan Africa, 32% and 70% of people respectively lacked access to safe potable drinking water and improved facilities of sanitation. Similar to this regional view, Ghana has made significant progress in providing basic water services at the national level. However, only 36% and 18% of the country's population have access to improved water and sanitation (WHO/UNICEF, 2015). These deficiencies in the water, sanitation, and hygiene (WASH) sector impose tremendous financial, health, and environmental costs on developing countries and their inhabitants (United Nations, 2015; Koppelaar, Sule, Kis, Mensah, Wang, Triantafyllidis & Shah, 2018).

Global studies suggest a general correlation between improvements in access to Water Supply and Sanitation (WSS) and overall rates of economic growth, but a detailed analysis of causation at national and sub-national levels is lacking (WHO, 2011). Changes in weather patterns such as the reliability and predictability of seasonal rainfall and the impacts of extreme events, now place unprecedented pressures on water

resources, especially in flood- and drought-prone regions of the globe. These concerns have made the SDGs, especially those directly relating to WASH even more difficult to achieve. Furthermore, proper sanitation and hygiene actions including provision and usage of toilet facilities, proper excrete disposal, and public and personal hygiene could be deterrent factors in the prevention of diseases through fecal-oral pathways (Center for Disease Control and Prevention, 2020). High population growth and increasing economic activities of the nation owing to a very high rate of birth, poor standard of living, and increasing activities of agriculture and lack of training on modern solid waste management (SWM) practice have resulted in the generation of quantities of solid waste that are a public health and environmental threat.

Although Ghana had in place measures for good SWM, it remains a significant environmental issue in the country (Puopiel, 2010; Abanyie, Amuah, Douti, Owusu, Amadu & Alhassan, 2021). As Abalo, Peprah, Nyonyo, Ampomah-Sarpong & Agyemang-Duah (2018) assert, of the volume of garbage produced in Ghana, only 44% is being transported whilst 56% of backlog is being indiscriminately deposited in the environment, and it could have negative impacts on the quality of water. Consequently, the purpose of its investigation and its contributions focus on an assessment of the practice of hygiene and sanitation in Doba and Nayagenia and the possible impacts on the quality of groundwater.

Solid waste issue is now intense during collection, treatment, storage, and disposal in peri urban zones, where most of the occupants dump their garbage in open drain pipes and open spaces (bushes) which have favorable breeding grounds for insects and flies. Outbreak of faeces-related ailments is intense in the investigation locations due to the prevalence of open defecation which imposes a negative impact on the quality of groundwater (boreholes and wells).

There is hence a need for WASH to be assessed at a community dimension. Although similar studies have already occurred throughout the globe, those which were done in Ghana were done in urban towns. Nevertheless, peri urban and rural areas are not spared either. In Kenya, the state of sanitation facilities at educational institutions has drawn prominence due to its great impact on educational performance and the health of people in the community. However, sanitation facilities in most Kenyan schools are usually poor, being marred by a lack of adequate numbers of toilets, poor maintenance, and absence of critical supplies including water, soap, and sanitary pads.

As stated by the Ministry of Education, most schools have a student-toilet ratio above the recommended standards, leading to unhygienic conditions that can cause the spread of diseases including cholera and diarrhea (Ministry of Education, 2020). This situation is worse in the rural and poor urban parts of the country, where the resources are scarcer. In the case of this research, these practices involved enforcing personal hygiene, compliance with handwashing, enforcement of toileting and waste disposal practices.

2.1.3 Principals' Enforcement of Personal Hygiene and Students' Safety

Enforcement of personal hygiene behaviors in public secondary schools bears heavily on the safety and health of students. Personal hygiene, including the practice of hand washing, oral hygiene, and overall body cleanliness, helps to prevent the outbreak of infectious diseases. Cited by the World Health Organization (2020), appropriate hygiene behaviors can minimize the occurrence of infectious diseases, which are very common in school settings due to frequent contact between learners. WHO (2020) argues that since schools are intended for the upbringing and education of children, these institutions must enforce hygiene behaviors for the protection of the health of learners. In a China-based study, Bowen, Ma, Ou, Billhimer, Long, Mintz and Hoekstra (2012)

discovered that hygiene education among learners in schools improves hygiene behaviors of learners. In their work, these writers highlighted the significance of including hygiene education in the curriculum of schools for the purpose of ensuring that learners are aware of and practice these behaviors. In their argumentation, these writers contend that education needs to be more than just a teaching of theories but must be supplemented with demonstrations and repeated reinforcements. Similarly, a case carried out in the United Kingdom by CDC (2015) revealed that policies at school level and administrative backing are essential in maintaining hygiene practice. As reported by CDC (2015), those schools that possess defined policies concerning hygiene and invest in hygiene facilities and supplies are more effective at a healthy school environment. An intervention by the school administration in tracking and reinforcing hygiene practice is essential to their continued application.

In Africa, the case is no different with personal hygiene being considered to be at the core of the scholastic success of learners at school. In that regard, a study carried out in Egypt by Talaat, Afifi, Dueger, El-Ashmawy, Marfin, Kandeel and El-Sayed (2011) demonstrated that the introduction of a handwashing program at secondary schools reduced significantly the prevalence of diarrheal ailments among learners. Talaat et al. (2011) also demonstrated that, even though generally accepted to be critical, a series of concerns hinder its introduction at school. These range from a deficiency in funding, through class size congestion, to a lack of awareness among staff and learners.

In conformance with the foregoing arguments, a Zambia-focused study by Joshi and Amadi (2013) indicated that even where facilities for hygiene are a presence, numerous usages by a large population often coupled with lack of maintenance causes usage of these facilities to be kept on a low level. In Kenya, the schools have often been called upon to introduce personal hygiene among learners and staff since it remains critical in

the preservation of the safety and health of learners. A study by Freeman et al (2014) give examples of the effectiveness of comprehensive hygiene programs at school. As an example, the "WASH in Schools" program carried out in Kenya indicated that frequent hygiene education, coupled with improved facilities for sanitation, produced a significant reduction in absence due to illness. As stated by Freeman, Greene, Dreibelbis, Saboori, Muga, Brumback and Rheingans (2014), these programs illustrate the value of joint efforts towards promoting hygiene practices.

Mutuku (2019) presented another program which indicated that most public secondary schools in Kenya experience issues of insufficiency in water supplies, poor sanitation facilities, and limited access to hygiene education. These are further exacerbated by a lack of resources and funds for maintenance of hygiene standards. Even with these drawbacks, those schools which have implemented effective comprehensive hygiene programs indicated a significant decline in absenteeism from illness and a better performance by the students in their studies. In Kangema Sub-county, the scenario is the same with promotion of personal hygiene being at the top of sanitation management activities undertaken by schools.

For instance, a study by Wanjiku (2021) found that schools that incorporated hygiene education into their curricula and provided regular training sessions for students and staff saw a marked improvement in hygiene practices. These schools reported fewer cases of waterborne and communicable diseases, demonstrating the effectiveness of continuous hygiene education in fostering a culture of cleanliness and health consciousness among students. Nonetheless, a lot remained to be addressed because Wanjiku (2021) along with other empirical studies covered in review had not thoroughly examined the degree to which the enforcement of certain personal hygiene behaviors affect safety of learners in public secondary schools, thus the study

2.1.4 Principals' Adherence to Handwashing Practices and Students' Safety

Proper hand washing practice thus precedes a child's survival. As claimed by Curtis, Cardosi and Scott (2016), world sensitization on the emergence of the Pandemic Influenza H1N1 outbreak in 2009 comprised of hand washing with clean water and soap, following critical points, as a prevention method. As stated by Advameg (2019), standard for good hand washing practice is initial wetting of hands thoroughly all over, then application of neutral soap, followed by hands being rubbed each other vigorously for around fifteen to twenty seconds, focusing mainly on fingertips, thumbs, wrists, finger webs and back of hands. Soap must be well-lathered throughout on hands, then washed under running water, and finally hands are wiped dry with a clean towel.

Critical times for hand washing include after using the toilet, after cleaning a child, and before handling food (Advameg, 2019). In a study conducted in Australia, Fawcett (2011) indicated that, for school-going children in particular, critical moments include after playing outside or with toys and pets. Although hand washing with soap is among the most effective and inexpensive ways to prevent diarrheal diseases and pneumonia, which together are responsible for the majority of child deaths globally each year, it is seldom practiced and not always easy to promote, despite its lifesaving potential (Fawcett, 2011).

As stated by a UNICEF report, engaging school-going children themselves as active promoters of hand washing with soap in schools engenders in the children a sense of ownership which makes new behaviour more likely to be practiced (Fawcett, 2011). Thus, important hygiene behaviors like good hand washing practice which are likely to be practiced beyond adulthood can be practiced by encouraging millions of school children to practice these good repetitive and non-reflective behaviours. In a similarly conducted study in Mexico, Auger, Colinders, Bihn, Gravani and Embrey (2015)

contend that since school children in developing nations constitute a population of about half of the nations' population, promotion of these good hygiene and hand washing practice is not only essential but also very pertinent in ensuring their safety in schools. In Ghana, for instance, the National Community on Water and Sanitation Programme among other mandates aims at scaling up the number of school children aged 6-15 years who wash their hands with soap, particularly after visiting the toilet (Brooker, 2018). Furthermore, the School Health and Education Programme (SHEP) in Ghana is to deliver comprehensive health education and services, including ensuring availability and utilisation of water and sanitation facilities in schools and promote usage of hand washing (Brooker, 2018).

Nevertheless, appropriate and functioning school sanitation and hand washing facilities are quite pivotal in ensuring good hand washing behaviour (Brooker, 2018). Even though programmes like the SHEP are in place in schools (Brooker, 2018), no studies have been done to evaluate and document the effects of these programmes on knowledge, attitudes and behaviour of school children. Amongst KwaZulu Natal Province schools in South Africa, hand-washing is stated by Adams, Bartram, Charter and Sims (2019) to be a critical and a one most cost-effective and pragmatic intervention which lowers infection and cross infection incidence amongst health-care providers and patients.

In Kenya, hand-washing behavior amongst secondary school students was revealed by Afubwas & Mwanthi (2014) to halve by nearly half the number of child deaths due to diarrhea and by one-quarter due to pneumonia. According to a study carried out in Maragwa Sub-county, Njuguna et al (2022) revealed that some of the most popular handwashing behaviors include; prior to eating and prior to preparation of foods or handling of uncooked meats, fish or poultry or other situation promoting possible

contamination. Njuguna et al (2022) also remark that, to lessen germs transmission, it is also better to wash and/or employ a hand antiseptic prior to and after attending a sick individual. In Kangema Sub-county, time devoted to hand washing is significant to minimize transmission of pathogens to foods, water, individuals and inanimate articles (fomites), for example, door handles, hand railings and other touched frequently articles (CDC, 2014). Appropriate hand hygiene entails the deployment of the usage of a soap and running water, rubbing hands vigorously for at least 20 seconds; paying much attention on the nail zones, in addition to the region between the digits (CDC, 2014). Thorough hand drying is a significant factor for the transfer of bacteria to skin, foods and environmental articles (CDC, 2014).

From WHO (2022), in a study carried out in Kangema Sub-county, some of the actions where hand washing is required are before preparing a drink/food, before eating and after eating and drinking, after visiting the toilet, after coughing, sneezing or blowing the nose, after handling faeces or urine, after handling frequently touched objects, for example, doorknobs and railings, after handling animals or animal feces, after handling currency, at the end of a day at work, school, market, play, sex, at the end of a journey, after handling uncooked eggs, after handling meat, after handling trash (WHO, 2022).

Hand washing, especially with the assistance of soap, by WHO (2022), can eradicate infection agents at the period they were spread by the secondary host and also prevent them from reaching the secondary host.

Thus, regular hand washing is a good way of preventing the spread of pathogens from a child to a child which hence improves the safety of learners. Nonetheless, WHO (2022) could not discuss varied handwashing practice used by varied schools and the way these policies affect safety of students.

2.1.5 Principals' Toileting Practices and Students' Safety

Toileting is a significant skill for everyday living that holds numerous social ramifications and for the child to reach this significant milestone, children, schools and families must develop a distinct toileting schedule (WHO, 2022). WHO (2022) indicates that techniques used during the toilet training period is priceless since often they are the first to note whether a child is developmentally prepared to toilet train, they inform and train parents to provide appropriate and sustained toilet training techniques and messaging, and they assist in conveying the correct toilet training techniques to the child.

In a case conducted in Malaysia, Aini and Laily (2010) observed that absence of a toilet at school translates to learners having to expend time visiting an unhealthy and at some points unsafe place in order to defecate. Aini and Laily (2010) also suggested that toileting behavior in schools not only affects education access, safety and productivity, they are critical tools to allow school communities to live in dignity and unleash their full potential. Since the access to toileting service and facilities is vital for human existence, its enhancement also relates to dignity and respect towards those in needs.

Aini and Laily (2010) claimed that, in such schools with ineffective toileting practice of utilising for example, tissue paper and boys' urinals, learners drop out of these kinds of schools, either by reason of outbreak of diseases or by concern of their parents. Every child must be safeguarded against the numerous health hazards being caused by inappropriate disposal of excrete (Aini & Laily, 2010). In terms of sanitation, lack of sheltered or distant defecation facilities leave women and children especially vulnerable with feelings of shame (Aini & Laily, 2010). In toilet training, urination tends to be highlighted since control of liquid by mass is much more difficult. Nevertheless, for most children control of bowel movements takes place much later.

There are several personal factors which can be responsible for this including physical, psychological and mental maturity. In a Canadian study, Agut, Ull and Minguet (2014) believe that control of bowel frequently takes place prior to control of urine. If they are most frequently visiting the loo for micturating, possibilities are that during micturating they might pass stool. It is for this reason why prior to control of bowel movements boys ought to prefer sitting to standing during initial phases of toilet training until control of bowel movements. Agut et al (2014) stated that, in most secondary schools, children receive training on bladder control. Agut et al (2014) also comment that provision of safety toilets also enhances health and safety and reduced time spent on visiting sanitary installations.

While more and more safety constructed toilet can enable people to leave the vicious cycle of diseases and poverty access to clean water and sanitation is therefore precursor to learner safety, educational attainment and development (Agut et al, 2014). Toilets located beyond 15 meters from the classes make girls feel insecure for themselves and the safety of their younger sibling. In addition, the tendency to waste time when children visit the toilets and there are long waiting periods due to many users which leads to incontinence (Agut et al, 2014). Long distances to the toilet lead to children relieving themselves in bushes and in the fences.

Toilets in 1-5 meters of reach, have poor construction leading to bad smell, in adequate cleansing and ventilation. Bad smell encourages flies that cause diseases through contamination of water and foods. These results hence vindicate the assertion that poor toileting is the root cause of all diseases and infections relating to hygiene and sanitation. This is due to clogged drain pipes since where water is stagnant, mosquitoes bred there causing spread of typhoid and malaria (Agut et al, 2014). It is evident that the provision of toilets, accessibility and maintenance of toilets are the most frequently

reported health-related issue in schools followed by insufficient supplies of water and poor hygiene practice. In Kenya and Kangema Sub-county, since incontinence is frequent among children who have movement disorders of a neurological cause, toilet training is included in the regular activities (WHO, 2022). Toilet training programme aims at imparting continence and appropriate hygiene practice. Learners are toileted numerous times throughout the day. As in most of the conductive programmes, learners can also undertake other parts of work during the day whilst being on toilet training such as sitting or dressing/undressing. WHO (2022) also suggests that these activities improve the safety of the learners. Nevertheless, WHO (2022) did not elucidate on how various toileting procedures affect the safety of the students in secondary schools.

2.1.6 Principals' Waste Management Practices and Students' Safety

Waste has remained a significant environmental problem all over since the industrial revolution. In addition to the waste from homes, hospitals and other public facilities, there are those from hospitals, industries, farms and other activities (Edwards & Cutter-Mackenzie, 2011). Secondary schools are not exempt. Kids squander things and resources without realizing it, whether they're wasting water by running the sink during tooth-brushing or squandering paper that's been used only twice. As stated by Edwards and Cutter-Mackenzie (2011), the education of children about the disposal of waste is vital to an environmentally conscious home.

Based on the necessity of propagating knowledge preservation to kids, practice of the 3Rs by kids should be practiced at the commencement of studies at school. In Norway, a study was carried out where it was shown by Eriksen (2013) that school children easily adopt an example provided it is taught or illustrated by teachers and parents since it is a great example that needs to be followed or emulated. Eriksen (2013) suggested that learning and teaching approaches which bring along tutoring have a distinct wish to

incorporate more children in reduce, reuse and recycle (3R) activities. Such activities with their parents back home can be fun 3R and kids will be eager to continue to such preservation activities as a regular affair at school (Eriksen, 2013). Such findings concur with the fact that school children must be exposed to the waste disposal activities due to where they acquire their message, make choices and subsequently act on them. In line with these arguments, in Malaysia a study conducted by Hasnah, Dody, Noraziah, Maznah and Sarifah (2012) reported that children at school are still acquiring their ability to identify the signs at secondary school of recycling plastic bottles and discarding products which have the recycling mark. Sustainability practice behaviors can be cultivated during the secondary school period in order to account for water conservation, the use of alternative energy, reduction of trash and environmental awareness on a regular basis every day at school.

A secondary school in Australia, Hallett Cove, has been practicing sustainability in which the children bring cans of soft drinks from home to drop in the recycling bin, then sing about recycling (Bates & Tregenza, 2020). Besides, students in the school learn about solid trash disposal, including placing banana peels in the compost pail and placing yogurt packaging in the recycling bin to be composted (Bates & Tregenza, 2020). Sustainability behaviors continue as in that other children observing these activities, they too will emulate and incorporate these activities in their everyday practice.

Sustainability can be promoted by also creating a natural setting around the school by doing activities such as chicken raising at the coop, gardening, offering recycling bins or educating the kids on the environment, which significantly assists in enhancing their knowledge on garbage disposal. These findings indicate that ideas and suggestions for waste management practices in each secondary school has the same equation and the

ultimate success is when every child can practice these activities in everyday life, not only in school but also in their own homes. In most schools in Sub-Saharan Africa, an effective school waste management programme incorporates relevant systems, processes and practices to ensure all aspects of the school's waste is managed, maximizing the potential to divert waste from disposal as landfill (Brooker, 2018). For example, in a study conducted in Nigeria, Lampa, Greculescu and Todorescu (2013) indicated that every school generates waste arising from routine activities such as classwork, sweeping, serving of food, and bush cutting.

Most frequent types of solid wastes found in most schools are paper, grass, nylon (used in manufacturing of pure water bags and biscuits, lollypops, ice cream, and sweet or candy covers), sugar cane, corn or maize cobs, and groundnut shells (Lampa et al, 2013). Lampa et al (2013) asserted that the problems concerning disposal of wastes at public venues including schools are numerous and they include the littering of remains of foods and other discarded items. This can lead to breeding of rats and other vectors of public health implication, i.e., biological causes of exposure (Lampe et al, 2013). Secondary schools in Kenya continually generate solid wastes which are not safely, effectively or economically disposed of. This leads to piling of the garbage from the schools which pollute and bring unsightliness and hence affect standards of living in the schools (Gakungu, 2011).

Gakungu (2011) adds that the experience of Solid Waste Management in secondary schools is poor with most collection mechanisms being ineffective and disposal mechanisms not being environmentally acceptable. Kangema Sub-county is not an exception with the issues of waste management ranging from reduction of waste generation, separation, change of behavior, collection, transport, treatment, reuse and disposal of the waste (UNEP, 2021).

In accordance with UNEP (2021), most secondary schools have not given adequate attention to the disposal of waste which has affected safety of learners due to disease-breakouts. Nevertheless, UNEP (2021) could not illustrate on how various forms of waste disposal practiced by different secondary schools have affected safety of learners.

2.2 Theoretical Literature Review

This research was informed by two theories. These were; the sanitation management theory and also the hygiene and safety theory.

2.2.1 The Sanitation Management Theory

This study was based on the sanitation management theory whose proponent was James May (2005). The theory holds that different stakeholders have major roles to direct on matters of hygiene and sanitation. That is, the use of contaminated water at any point in food preparation, for drinking or even cleaning of the hospitality facility to washing the hands of the food handlers could be the root cause of all contamination. In all food institutions, micro-flora on the hands and outer garments of food handlers generally reflects the environment and habits of individuals. The hygiene and sanitation theory lays emphasis on cleanliness and the absence of germs. This also extends to the facilities which enable hygiene to be achieved.

With regard to the present study, sheer safety of a foodstuff or ingredient can never be ensured in schools. This highlights the salience of sanitation and hygiene measures in schools in exposing young kids to diseases. That is, a degree of contamination of the origin of the raw materials used during the preparation of comestibles in the tourism and hotel facilities can be averted in order to shun catastrophes. Child being in control of selection of his or her path and exploration of their surroundings work better. This assists the children to acquire knowledge, skill and attitude to surmount hygiene and

sanitation issues thus increasing learner retention. Hygiene and sanitation are customary behaviours which must be taught and reinforced through role modelling for lasting effect.

2.2.2 The Health and Safety Theory

This study was also guided by Health and Safety Theory (Domino Theory) by Herbert William Heinrich (1976). Heinrich (1976) elucidated that for every accident causing a major injury, at a work setting, 29 accidents caused slight or minor injuries and 300 accidents with no injuries. Because most of the accidents share identical root causes, more regular accidents with no injuries can be averted by avoiding those causing a spectrum of injuries. Heinrich (1976) came to his conclusion having examined thousands of the forms of investigation of accidents filled by school heads who frequently blamed teachers for causing accidents without conducting comprehensive investigation of root causes.

Heinrich (1976) carried out safety work at numerous schools, with data published, which provides rules of thumb of how to extrapolate from incidents and near misses to a reasonable estimate of the likelihood of genuine accidents. The justification of its application is due to the nature of safety and health injuries to students and teachers at schools being a result of error in social relations at school.

2.3 The Conceptual Framework

The conceptual framework was derived from principals' sanitation management practice delineated through safe water provision, handwashing, toileting and disposal of refuse practice which formed the independent variables while safety of learners in public secondary schools formed the dependent variables. Intervening variables were; staff and students attitude as depicted in Figure 1:

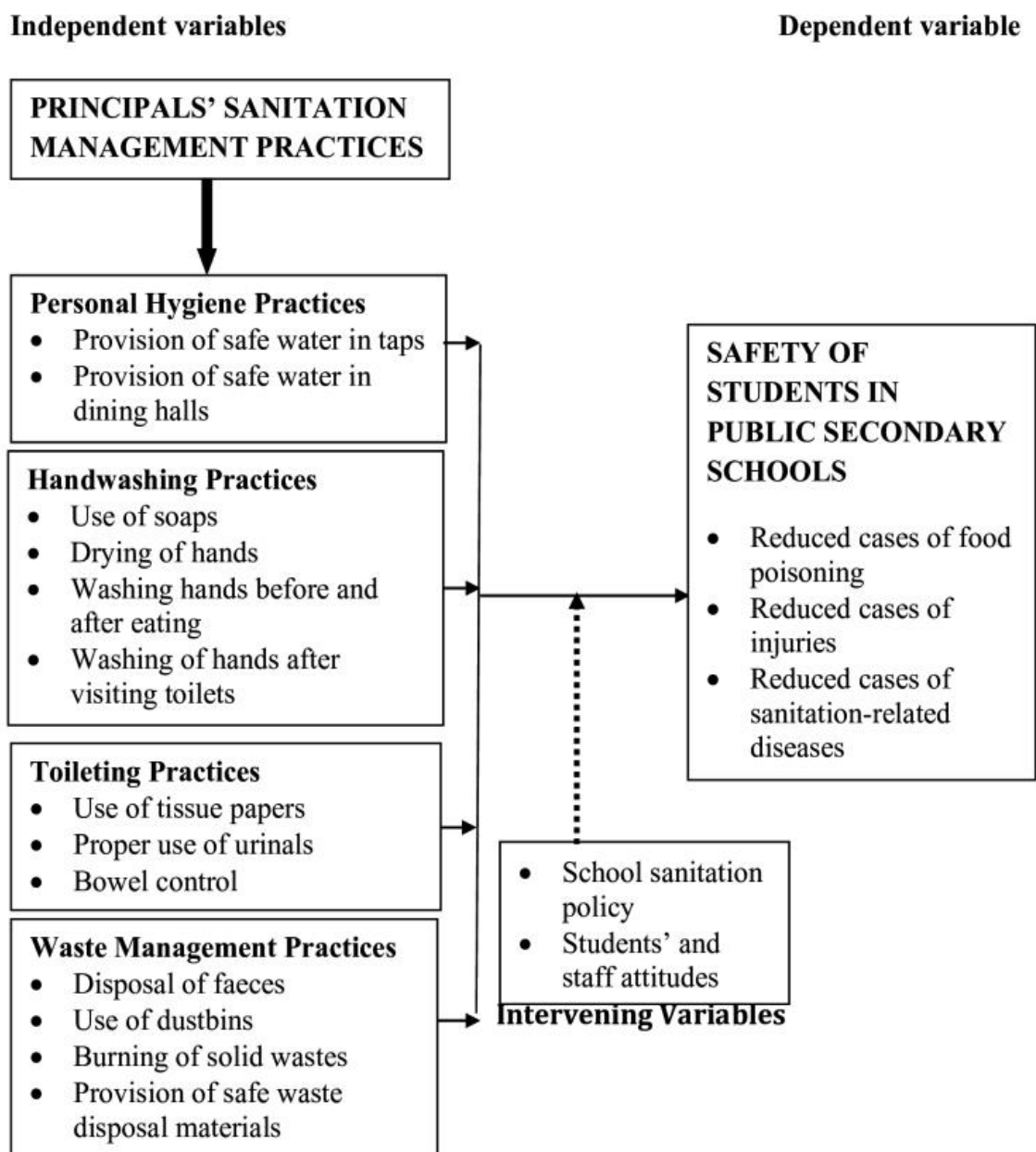


Figure 1: The Conceptual Framework of the Study
 Source: Researcher (2025)

2.4 Research Gaps

Literature review has revealed that public secondary schools apply numerous sanitation control interventions for promoting safety of students. These vary from enforcing personal hygiene to handwashing adherence to imposing toileting and refuse disposal interventions. However, literature review has revealed numerous gaps in terms of studies and knowledge. For example, on principals' imposing personal hygiene interventions and students' safety, Wanjiku (2021) and other empirical studies reviewed have not deeply explored the extent to which imposing some personal hygiene interventions affect students' safety in public secondary schools.

On principals' adherence to handwashing practices and safety of students, a study by WHO (2022) found that handwashing especially when done with soap, can remove agents of infection both at the time they were emitted from the secondary host and prevent them from reaching the secondary host. However, WHO (2022) failed to articulate different handwashing practices adopted by different schools and how such practices influence safety of learners. On principals' enforcement of toileting practices and safety of students, WHO (2022) posits that the aim of toilet training programme is to teach continence and acceptable hygiene practices. However, WHO (2022) as well as other reviewed studies have not articulated how different toileting practices influence safety of students in secondary schools.

On principals' disposal of refuse and safety of learners, research conducted by UNEP (2021) established that little concern for waste disposal has been shown by the majority of secondary schools which has had effects on learners' safety caused by outbreak of diseases. Yet, UNEP (2021) and other reviewed studies have not examined critically how various forms of refuse disposal adopted by various secondary schools have

affected safety of learners. These were the gaps in studies which were endeavored to be filled by the current study.

2.5 Literature Review Summary

From the literature review, it is apparent that a good number of public secondary schools have had occasions where the learners were not feeling safe and their health status compromised. In a quest to control these issues, principals of the public secondary schools have adopted a variety of sanitation control measures from personal hygiene enforcement, handwashing compliance, toileting and refuse control measures. However, much more remains to be done by way of researching on the impact of each of these adopted sanitation control measures on safety of learners of public secondary schools, hence the study.



CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the research methodology that was used to carry out the study. It focuses on the research design, location of the study, target population, sampling and sampling procedures, research instruments, piloting of research instruments, methods of establishing validity, reliability, credibility and dependability, data collection and analysis procedures as well as ethical considerations.

3.1 Research Methodology

The mixed methodology used was one that involved the application of qualitative and quantitative methods. This method was appropriate since for this study, data collection and analysis involved both qualitative and quantitative data in one study. In the current study, the researcher adopted the strength of both qualitative and quantitative approaches to support one another. In quantitative method, according to Creswell (2014), the researcher poses narrow questions and gathers data that can be quantified from a large number of participants. In the current case, data were gathered through questionnaires. Meanwhile, qualitative data were gathered based on the opinion of participants and data comprised mainly of words from participants. In the current case, data were gathered through interview schedules.

3.2 Research Design

The investigation adopted a concurrent triangulation research design because it is a one-phase design in which the researcher carried out quantitative and qualitative approaches at the same time and with equal significance. This design was appropriate because it yielded well-validated and supported findings because there were no interactions between respondents completing questionnaires and those undergoing interviews.

This design generally involves the concomitant, yet separate, data collection and analysis of qualitative and quantitative data in a way that allows the researcher to have a better understanding of the research question (Creswell, 2014). The two data sets were merged by the researcher through triangulation. This design suited the present study since it permitted the collection of quantitative and qualitative data. It involved collections of quantitative data which can be transformed to a table along a continuum of numbers. This design permitted the collection of data which describes events and then organizes, tabulates, represents and describes data collection. It used visual tools such as tables in order to ease data distribution understanding by the reader. This was also followed by narrative and in-depth description of small numbers of cases.

3.3 Site of Research

The research was conducted in Kangema Sub-county in Murang'a County. Kangema Sub-county has a population of about 80, 447 individuals and occupies 173.7 km², thus having a population of 463 individuals per km² (KNBS, 2019). Kangema Sub-county's main economic activities are trade and agriculture. Nevertheless, as indicated above, in most public secondary schools in Kangema Sub-county is a very different story with injury cases, poisoning by foods and death still being reported. As previously indicated in background, JMP (2012) shows that cases of unsafe schools have continued to increase with 45.7% of students' injuries, 34.1% occurrences of poisoning by foods and 13.8% occurrences of attack by sanitation-related diseases. This presents a picture of worsening situation of safety of students in public secondary schools. Attempts at curbing these issues have not borne much significant fruits. This guided the selection of Kangema Sub-county as the setting of study.

3.4 Target Population

Kangema Sub-county had 27 public secondary schools and hence the target population was 1463 respondents who included 27 principals, 1434 teachers and Sub-county Directors of Education (TSC & MoE) as indicated in Table 1:

Table 1: Target Population of the Study

Respondents	Target Population
Principals	27
Teachers	1434
Sub-county Directors of Education (TSC & MoE)	2
Total	1463

Source: Kangema Sub-county Education Office (2025)

3.5 Sampling Procedures and Sample Size

To obtain a sample size that has an adequate size relative to the goals of the study, the researcher will adopt Yamane's Formula. This was suitable since it yielded a precise and finite sample size which was highly representative since it is a formula based on target population at high confidence level. This was applied as follows:

$$N_0 = \frac{N}{1 + N(e^2)}$$

Where, N_0 = desired sample size at 95% confidence interval

N = Target Population

e = Confidence level of 5% (decimal equivalent is 0.05)

Thus, desired sample was:

$$N_0 = \frac{1463}{1 + 1463(0.05)^2}$$

$$N_0 = 312 \text{ respondents}$$

Stratified sampling was used to create five different strata based on the number of zones in Kangema Sub-county. From each zone, four (4) principals were sampled through purposive sampling based on secondary schools that have struggled with students' safety. This is due to the consideration that according to Creswell (2014), the aim of purposive sampling is to ensure that one develops comprehension of variation of the phenomenon of interest in the setting and to test emerging ideas about the setting. All the Sub-county Directors of Education (TSC & MoE) were be considered for the study through purposive sampling. However, 58 teachers was sampled from each zone through simple random sampling for the purpose of avoiding bias and favouritism. This sampling process achieved a sample of 20 principals, 290 teachers and 2 Sub-county Directors of Education (TSC & MoE) shown in Table 2;

Table 2: Sampling Grid

Categories	Target Population	Sample Size	Sampling Techniques
Principals	27	20	Purposive sampling
Teachers	1434	290	Simple random sampling
Sub-county Directors of Education	2	2	Purposive sampling
Total	1463	312	

Source: Researcher (2025)

3.6 Research Instruments

They are the tools through which data on the foci of set research goals were collected. They comprised questionnaire for teachers and interview guides for principals and the Sub-county Directors of Education (TSC & MoE).

3.6.1 Questionnaire for Secondary School Teachers

The questionnaire with closed test items was used by the researcher in order to retrieve quantitative data from secondary school teachers. This is due to the fact that according to Morse (2010), a questionnaire is a data collection instrument which is comprised of a set of questions and other inquiries for the sake of obtaining information from

respondents and which tends to be prepared for statistical analysis of the response. The questionnaire consisted of two parts. The first section consisted of information on respondents' demographic profiles, while the second part contained 5-point Likert Scale type of questions based on the research objectives.

3.6.2 Principal and Sub-county Director of Education Interview Guide

Structured interviews with open-ended test questions were adopted to collect qualitative data from principals and Sub-county Directors of Education (TSC & MoE). This is due to the fact that, according to Kothari (2005), interviews aim at explaining the meaning of major ideas in a study and hence, the most important work in an interview is to find meaning in what interviewees state. In this regard, interviews were appropriate since they allowed the researcher to learn the respondents' experiences on the matters of sanitation management practice and the way each practice impacts safety of learners in public secondary schools. In other words, the interviews allowed the researcher to pose more inquisitive questions on matters concerning each of the research objectives.

3.7 Piloting of Research Instruments

Piloting of the research tools was carried out with 32 respondents from 2 public secondary schools from Kangema Sub-county since according to Kothari (2005), the pilot sample should be 10% of the size of the study sample (10.0% of 312). Piloting was intended to test on suitability and clarity of questions on the instruments designed, relevance of the information being requested and adequacy of the language used. Results of piloting of the instruments were also used to pretest the research tools in order to authenticate and determine their reliability. It was also used to anticipate the shortcomings or challenge encountered by respondents such as interpretation during completion of the questionnaires and time planning for data collection. Furthermore, the interview schedule was used for trial runs to ensure that questions were well articulated

and elicited appropriate range of responses which helped the researcher to spot area of revision. Respondents used for piloting were not used for the main study in order to avoid bias.

3.7.1 Validity

In a bid to ensure validity of the research instruments, university and other education management experts helped in validation. Proposals provided subsequently were reflected in the study on enhancing the validity of the inferences to be drawn. This is owing to the fact that according to Kothari (2005), experts' remarks, opinion and recommendations are fundamental in refining test items in the instruments. In the case at hand, the researcher reviewed the research instruments for suitability of items in order to detect those which were unclear and uncertain. Such of these items were rephrased accordingly for the respondents to understand them very well. The researcher enhanced the quality of the instruments by substituting dubious questions with better-fit questions.

3.7.2 Reliability

Test re-test technique was used to establish reliability of the test items. In this case, the test items were administered twice to a group of respondents. Cronbach Alpha Method was used to establish the reliability index between the two sets of scores. The closer the Cronbach Alpha Coefficient is to 1, the higher internal consistency of the test items in the scale. In this study, a reliability coefficient, $r = 0.725$, was obtained, which indicated high internal reliability and was acceptable. This because according to Kothari (2005), any Cronbach Alpha value between 0 and 1 implies high internal consistency.

3.7.3 Credibility

The validity of the instruments was determined by data triangulation by several analysts since participants and readers were the only persons who could reasonably determine the validity of the findings.

As Creswell (2014) notes, in terms of establishing that what you find in terms of the findings of the research is credible, you rely more on the depth of the data you collect, rather than on how much data you collect.

3.7.4 Dependability

In this work, in order to ensure dependability, qualitative data collection processes were reported in detail to allow the researcher to replicate the inquiry and attain comparable results. As stated by Kothari (2005), dependability helps to ensure that the research findings are comparable and could be repeated. This was indicated by the standard in which the research was carried out, analyzed and reported. Each process in the work was reported in detail to allow the researcher to replicate the inquiry and attain comparable results.

3.8 Data Collection Procedures

The researcher requested an introductory letter from the School of Postgraduate Studies of Mount Kenya University and Authorization Letter and Research Permit from National Commission for Science, Technology and Innovation (NACOSTI). The researcher also sought an authorization letter from The County Commissioner and County Director of Education, Murang'a. The researcher then booked appointments with the respondents to administer questionnaires and conduct interviews to collect prerequisite data for the study. The questionnaires were administered to the respondents to collect quantitative data with the help of a research assistant who was trained for three days. Duly filled questionnaires were collected and safely stored for data analysis. At the same time, the researcher conducted interviews among principals and the Sub-county Directors of Education.

3.9 Data Analysis Procedures

Data analysis started with recognizing common themes. This relevant data was separated into phrases or sentences, which encompassed a single, definite idea. The answers to the close-ended questions were coded and labeled. Frequency counts of their answers were secured to produce data about the respondents and to depict the overall trend of discovery on the several variables that were being examined. Qualitative data were examined thematically based on the study aims and reported in narrative forms. Quantitative data were examined descriptively through frequencies and percentages and inferentially through Pearson's Product Moment Correlation Analysis with the assistance of Statistical Packages for Social Science (SPSS Version 25). Pearson's Product Moment Correlation Analysis was appropriate due to the fact that it examined the correlation of the independent variables and the dependent variable. Quantitative results were reported through the aid of table(s) as shown in Table 3;

Table 3: Data Analysis Matrix

Research Questions	Independent Variable	Dependent Variable	Quantitative Data Analysis	Qualitative Analysis
What is the influence of principals' enforcement of personal hygiene practices on safety of students?	<ul style="list-style-type: none"> • Principals' enforcement of personal hygiene practices 	<ul style="list-style-type: none"> • Students' safety 	<ul style="list-style-type: none"> • Descriptive statistics • Pearson's Product Moment Correlation Analysis 	<ul style="list-style-type: none"> • Thematic analysis
To what extent does principals' adherence to handwashing practices influence safety of students?	<ul style="list-style-type: none"> • Principals' adherence to handwashing practices 	<ul style="list-style-type: none"> • Students' safety 	<ul style="list-style-type: none"> • Descriptive statistics • Pearson's Product Moment Correlation Analysis 	<ul style="list-style-type: none"> • Thematic analysis
How does principals' enforcement of toileting practices influence safety of students?	<ul style="list-style-type: none"> • Principals' enforcement of toileting practices 	<ul style="list-style-type: none"> • Students' safety 	<ul style="list-style-type: none"> • Descriptive statistics • Pearson's Product Moment Correlation Analysis 	<ul style="list-style-type: none"> • Thematic analysis
To what extent do principals' waste management practices influence safety of students?	<ul style="list-style-type: none"> • Principals' waste management practices 	<ul style="list-style-type: none"> • Students' safety 	<ul style="list-style-type: none"> • Descriptive statistics • Pearson's Product Moment Correlation Analysis 	<ul style="list-style-type: none"> • Thematic analysis

3.10 Ethical Considerations

Ethical considerations of research involve explaining what the content of the research was and what participants had to do, how informed consent was obtained and confidentiality was upheld.

3.10.1 Confidentiality and Privacy

The researcher was careful not to disclose any of the information provided by the respondents which involved their personal or their personal life. The respondents were assured that no identifying information about them would be revealed in written or other

communication. Concerning confidentiality, the respondents were assured that the information provided would only be used for the stated purpose.

3.10.2 Anonymity

The investigator ensured the interviewees that their identity would not be disclosed at all. Furthermore, no identifying detail regarding the person or organization would be disclosed through written or other means of communication.

3.10.3 Informed Consent

The purpose and the nature of the study were made known to the respondents by the researcher. The researcher told the respondents what was to be done at each stage of data collection so that they could willingly engage. Permission was requested by the researcher from respondents who had to sign informed consent forms (Appendix II). Their participation was on a voluntary basis and that they could rescind their decision and drop out at a time of their choice before and during the research and that they were not being victimized.

3.10.4 Storage of Data Collected

The raw data thus captured were stored for ease of referencing. Upon analysis of the data, computer printouts were stored and softcopies were saved in storage mediums including CDs and flash discs.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter gives the results of the study. In terms of clarity and chronology, it is organized along the four research questions which the study aimed at providing answers. In the first portion, however, demographic data about respondents are shown, since it could be relevant in interpreting the data which they provided.

4.1 Response Rate

For the purpose of this study, 290 questionnaires were handed to teachers and 259 questionnaires were completed and returned. In addition, 16 principals and 2 Sub-county Directors of Education (TSC & MoE) were administered interviews. This gave the response rates shown in Table 4;

Table 4: Response Rates

Respondents	Sampled Respondents	Those Who Participated	Achieved Return Rate (%)
Principals	20	16	80.0
Teachers	290	259	89.3
Sub-county Directors of Education (TSC & MoE)	2	2	100.0
Total	312	277	88.8

Source: Field Data (2025)

Table 4 shows that 80.0% of the principals responded compared to 89.3% for the teachers. Interestingly, all of the 2 Sub-county Directors of Education (TSC & MoE) (100.0%) took part in the investigation. This translated to a mean response rate of 88.8%, which is compatible with Creswell's (2018) arguments that a response rate of above 75.0% is adequate. This data was significant since it allowed for generalizability of the investigation findings to the target population.

4.2 Respondents' Demographic Information

The data collection tools requested demographic data from the respondents. This comprised gender and educational level. This was required since this factor was likely to affect their ability to provide credible data regarding the subjects of the research.

4.2.1 Gender of the Respondents

Information about the distribution of the respondents by gender was collected and the findings are shown in Table 5:

Table 5: Distribution of the Respondents by Gender

Gender	Principals		Teachers		Sub-county Directors of Education	
	f	%	f	%	f	%
Male	10	62.5	153	59.1	1	50.0
Female	6	37.5	106	40.9	1	50.0
Total	16	100.0	259	100.0	2	100.0

Source: Field Data (2025)

Table 5 shows that majority, 10(62.5%), of the principals were male whereas 6(37.5%) were female. In the same token, slightly more than half, 153(59.1%), of the secondary school teachers were male whereas their female counterparts constituted 106(40.9%). However, the Sub-county Directors of Education (TSC & MoE) were equally distributed. These data reveal that there was adequate gender parity at all levels of the study and that the extent to which sanitation management practices adopted by principals influence the safety of students in public secondary schools is of great concern to male and female stakeholders. This further indicates that data on gender help to identify potential disparities in how students experience and perceive safety measures, as well as the impact of sanitation practices. For instance, male and female students may have different needs or face distinct challenges related to hygiene, health, or safety in school environments.

By gaining a deeper understanding of these distinctions, more focused and productive interventions can be designed. Furthermore, the compilation of gender-specific data can give researchers a better sense of whether principals' sanitation activities benefit both genders to the same degree or whether unintended biases could be creating an unequal burden on one of the groups. This can also be used to determine whether gender-related factors, for example, cultural norms or responsibilities, impact the application or reception of sanitation activities. In relation to safety, gender data can be used to determine whether female students, for instance, perceive themselves to be safer or have greater access to sanitation facilities than their male counterparts. This data is invaluable for crafting policies to deliver inclusive and equitable safety provisions for all pupils. As a result, the compilation and analysis of gender data can be used to create valid, full, and equitable research conclusions capable of initiating improvements in school safety and sanitation activities.

4.2.2 Respondents' Level of Education

The questionnaire instruments gave information on the level of education of principals, teachers and Sub-county Directors of Education (TSC & MoE). Results are shown in Table 6;

Table 6: Respondents' Level of Education

Level of Education	Principals		Teachers		Sub-county Directors of Education	
	f	%	f	%	f	%
Diploma	0	0.0	38	14.7	0	0.0
Bachelors' Degrees	11	68.8	182	70.2	1	50.0
Postgraduate	5	31.2	39	15.1	1	50.0
Total	16	100.0	259	100.0	2	100.0

Source: Field Data (2025)

Table 6 shows that most, 11(68.8%), of the principals held Bachelors' Degrees whilst 5(31.2%) held postgraduate qualifications. Likewise, most, 182(70.2%), of the teachers held Bachelors' Degrees, 39(15.1%) held postgraduate qualifications whilst 38(14.7%) held Diplomas. Fifty percent, 50(50.0%), of the Sub-county Directors of Education held Bachelors' Degrees whilst the remainder held postgraduate qualifications. This information shows that the respondents held basic education which met the expectations of them being qualified to respond to questions on the extent to which sanitation management practices carried out by principals affect safety of learners in public secondary schools in secondary schools. This implies that respondents' educational level can be used as a driving factor on the basis of which the control of sanitation can be determined by principals and its potential impact on learners' safety.

The principals who were more qualified could be more knowledgeable about modern sanitation practices and safety standards, hence potentially leading to a higher degree of safety interventions application on the school environment. Additionally, educational levels can determine the ability of a principal to effectively communicate and carry out sanitation policies among staff and students. Respondents' education levels could also determine their perception of safety and sanitation. Teachers, students, and parents with higher education levels, for instance, could have varied expectations or better appreciation of the significance of sanitation practice compared to individuals at a lower education level.

By including education data in the analysis, researchers can effectively examine the link between educational background and the capacity for effectively managing sanitation practice. This data can then be used to identify areas of need for training or education in better sanitation management that can accommodate the safety of learners.

Lastly, with the addition of educational data, the analysis can be more robust and allow for more focused recommendations for improving safety in secondary schools.

4.3 Students' Safety Status in Public Secondary Schools

The study sought to assess the status of students' safety in public secondary schools. This was measured by taking stock of the number of reported cases of food poisoning, injuries and sanitation-related diseases for the last five years (2020-2024). Findings are shown in Table 7;

Table 7: Status of Students' Safety in Public Secondary Schools in Kangema Sub-county between 2020 and 2024

Status of Students' Safety	Years of Examination				
	2020	2021	2022	2023	2024
	%	%	%	%	%
Cases of food poisoning	17	22	24	21	31
Cases of injuries to students	29	35	38	44	53
Cases of sanitation-related diseases	15	19	18	22	25

Source: Field Data (2025)

Table 7 shows that safety of students had not been good with a large number of public secondary schools experiencing cases of food poisoning, injury in addition to outbreak of diseases relating to sanitation. Such a result confirms the assertions of JMP (2012) that cases of unsafe schools had risen with 45.7% of cases of injury to the students, 34.1% cases of food poisoning and 13.8% cases of attack by diseases relating to sanitation. This is also in conformity with what was shown by a survey carried out by Mwangi, Wambui and Maina (2021) who showed that, in Kangema Sub-county, a minimum of 30% of secondary schools had at least a case of food poisoning between 2020 and 2023. Additional data from studies by Kamau and Njoroge (2022) reported a rising trend of school-related injuries ranging from minor playground incidents to more dangerous laboratory incidents.

Overcrowding of class bases and poorly maintained facilities were shown by their data to have directly caused these injuries. Furthermore, Ochieng, Nyambura and Kiptoo (2023) reported repeated epidemics of waterborne diseases including cholera and typhoid and attributed them to inadequate sanitation facilities. These observations reflect the fact that, against a background of rising awareness, system failures continue. That is, safety of students in public secondary schools is a cause of concern due to frequent occurrences of food poisoning, injuries, and outbreak of preventable diseases associated with poor sanitation.

Most of the affected schools lack basic standards of hygiene, which leads to epidemic occurrence of preventable diseases. Improper handling and storing of foods have caused incidents of food poisoning, endangering the health of students. Besides, inadequate safety standards and ill-maintained facilities escalate the occurrence of even minor injuries. Such concerns not only surround the health of students but also impair their performance at school, underscoring the importance of better health and safety standards at school.

4.4 Principals' Enforcement of Personal Hygiene Practices and Students' Safety in Public Secondary Schools

The investigation aimed at studying the impact of principals enforcing personal hygiene behaviors on safety of learners in public secondary schools. Descriptive data were gathered from teachers and the results are shown on Table 8;

Table 8: Teachers' Views on the Influence of Principals' Enforcement of Personal Hygiene Practices on Safety of Students in Public Secondary Schools

Test Items	Ratings				
	SA %	A %	U %	D %	SD %
In public secondary schools, there is rare provision of safe water in taps which has not ensured that students are safe	51.8	11.5	5.8	5.8	25.1
To ensure students' safety in public secondary schools, there is provision of clean and safe water in the dining halls	54.0	14.4	5.8	11.5	14.4
Public secondary school principals ensure that students are well-groomed as a way of guaranteeing their safety	57.6	9.4	7.2	9.4	16.4
In public secondary schools, there is enforcement of personal mannerisms among students as way of ensuring their safety	48.2	8.6	5.8	20.9	16.4
In public secondary schools, students have been safe since there has been enforcement of effective hygiene practices	41.3	9.3	4.6	39.0	5.8

Source: Field Data (2025)

Table 8 indicates that 135(51.8%) of the teachers strongly agreed with the opinion that, in public secondary schools, there is a rare provision of safe water in taps which has not made the students safe as did 30(11.5%) who agreed, 16(5.8%) were undecided, 16(5.8%) disagreed on the other hand 66(25.1%) strongly disagreed. This study also discovered that a little more than half, 140(54.0%) of the teachers strongly agreed with the opinion that, in order to ensure the safety of students in public secondary schools, there is provision of clean and safe water in the dining whereas 38(14.4%) agreed. However, 16(5.8%) were undecided, 30(11.5%) disagreed on the other hand 38(14.4%) strongly disagreed. This study discovered that 150(57.6%) of the teachers strongly agreed with the opinion that principals ensure that students are well-groomed as a means of guaranteeing their safety in public secondary schools whereas 25(9.4%)

agreed. But 19(7.2%) were undecided, 25(9.4%) disagreed while 43(16.4%) strongly disagreed. Research indicated that 125(48.2%) of teachers strongly agreed with the opinion that, in public secondary schools, there is personal mannerism of students enforced as a means of ensuring their safety while 23(8.6%) agreed, 16(5.8%) were undecided, 55(20.9%) disagreed and 43(16.4%) strongly disagreed. Research indicated that 107(41.3%) of teachers strongly agreed with the opinion that, in public secondary schools, the students have remained safe since there has been enforcement of good hygiene practices while 25(9.3%) agreed, 12(4.6%) were undecided, 102(39.0%) disagreed and 16(5.8%) strongly disagreed.

These observations authenticate the findings of a study conducted by Sharma, Verma and Singh (2021) that a critical dimension of student safety that remains neglected is the provision of safe water at the school compound. As reported by Sharma et al (2021), clean and safe water, coupled with appropriate hygiene practice, forms a foundation of student safety and overall health. In the same vein, a study conducted by Johnson and Richards (2020) similarly discovered that for most public secondary schools, access to clean and safe water continues to be a problem. Johnson and Richards (2020) also discovered that most of the schools lack operable water taps, thus exposing students to unclean sources of water.

As suggested by Johnson and Richards (2020), the absence of clean water in public schools often coexists with the spread of waterborne diseases, which can bring about absenteeism and interruption of the performance of learners in their studies. Such absence of clean water not only affects the hygiene of learners but also their safety because they lack accessible clean water for personal hygiene. As suggested by Ochieng and Njoroge (2022), the absence of trustable sources of water in schools is a direct factor leading to the increase in diseases like diarrhea and cholera, which are most

dangerous to juvenile learners. This provision is required to ensure learners' health and prevent potential outbreaks of waterborne diseases. By creating accessibility of clean water in dining areas in schools, the danger of learners consuming murky waters, which acts as a main carrier of most diseases (Okoro, Njoroge & Ndirangu, 2019), can be averted. In addition, the accessibility of clean water for learners promotes proper hygiene and consumption of water required for maintaining mental quickness and overall health, hence ensuring a better learning environment (Hernandez, Johnson & McDonald, 2021). Besides the accessibility of clean water, the role of the principals of schools includes encouraging proper dressing and personal hygiene of the learners.

Research carried out by Smith and Brown (2020) shows that students who practice good personal grooming and hygiene are less likely to experience health issues that could compromise their safety. In public secondary schools, principals must enforce policies that encourage students to maintain cleanliness and personal grooming standards. This includes ensuring that students wash their hands regularly, especially before eating, and promoting the importance of good hygiene practices, such as brushing teeth and wearing clean uniforms. When students are well-groomed and adhere to hygiene protocols, they are less likely to fall ill, thereby reducing the risk of safety concerns related to preventable diseases.

Furthermore, imposing personal mannerisms and standards of behavior in the school environment plays a critical role in maintaining a safe and disciplined school environment. As Olumide and Nwaokoro (2019) argued, the introduction of discipline among students plays a critical role in ensuring a safe learning environment. Teachers and principals who foster respectable behaviors and ensure that learners adhere to school policies create a safety culture where learners are protected from violence, bullying, and other unfavorable activities.

Efficient behavior standard application reduces incidents of conflict and creates a good conducive environment for learning. Consequently, learners who are sufficiently taught on manners and etiquette refrain from engaging in activities that are not safe and could lead to harm. Lastly, introduction of appropriate hygiene practice in the school environment was argued to bear a direct relation with the overall safety of learners. As shown by Patel, Kumar and Lee (2021), schools that foster stringent hygiene standards, such as regular handwashing, sanitizing of floors and other surfaces, and clean toilets, have fewer outbreaks of infectious diseases.

These hygiene practices are particularly important in preventing the spread of viruses and bacteria, which could otherwise jeopardize the health of the student body. By ensuring that hygiene standards are followed consistently, schools can mitigate the risk of infectious diseases, thus ensuring that students remain healthy and safe. These findings affirm the fact that provision of clean and safe water, the enforcement of proper grooming standards, the promotion of good personal mannerisms and the implementation of effective hygiene practices are all essential factors in ensuring the safety of students in public secondary schools.

4.4.1 Inferential Analysis

To establish test for influence of principals' enforcement of personal hygiene practice on students' safety in public secondary schools, data were collected from 16 principals of sampled public secondary schools on frequency (Very Often = 5, Often = 4, Sometimes = 3, Rarely = 2 and Never = 1) of their enforcement of personal hygiene practice by their students and students' safety of students in public secondary schools in terms of number of cases of food poisoning, injuries and sanitation-related diseases for the last five years (2020-2024). Results are shown in Table 9:

Table 9: Frequency of Principals' Enforcement of Personal Hygiene Practices and Students' Safety in Public Secondary Schools

How often Principals Enforce Personal Hygiene Practices	Students' Safety		
	Number of Food Poisoning Cases	Number of Injuries to Students	Number of Sanitation-related Diseases
1	12	23	33
1	14	34	27
2	9	39	23
3	11	35	38
4	5	40	37
2	8	47	19
2	9	77	21
4	5	57	34
2	5	59	41
3	3	38	34
4	8	44	28
2	8	37	23
2	9	65	24
1	11	71	25
3	13	45	26
4	14	61	28

Source: Field Data (2025)

Table 9 indicates that, in those public secondary schools where principals tend to enforce hygiene practice adherence, safety has comparatively improved with fewer incidents of food poisoning, student injuries, and sanitation-linked cases being reported. This suggests that appropriate hygiene practice, including frequent handwashing, appropriate food handling, and cleanliness of class and dormitory environments, slows down the spread of infectious diseases. If the students follow these practices, the incidence of foodborne diseases, including food poisoning, tends to decline considerably since contaminated food is less likely to be ingested. Furthermore, a focus on hygiene tends to foster a cleaner and more secure school environment, which lowers the risk of accidents and injuries. For example, well-equipped sanitation facilities and classrooms reduce the chances of slips, falls, and other avoidable accidents. Regular reinforcement of hygiene procedures also engenders a safety culture, in which students

themselves are more mindful of their health and well-being. In addition, with appropriate hygiene procedures in place, fewer health problems associated with sanitation occur, including skin infections or breathing problems. Overall, those schools for which hygiene is a highest priority tend to have fewer health crises, engendering a safer and healthier climate for both students and teachers. The above data were placed in Pearson's Product Moment Correlation Test Analysis and results are depicted in Table 10:

Table 10: Relationship between Principals' Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools

		X1	B	C	D
X1	Pearson Correlation	1	.574**	.583**	.523**
	Sig. (2-tailed)		.001	.001	.003
	N	16	16	16	16
B	Pearson Correlation	.574**	1	.959**	.932**
	Sig. (2-tailed)	.001		.000	.000
	N	16	16	16	16
C	Pearson Correlation	.583**	.959**	1	.964**
	Sig. (2-tailed)	.001	.000		.000
	N	16	16	16	16
D	Pearson Correlation	.523**	.932**	.964**	1
	Sig. (2-tailed)	.003	.000	.000	
	N	16	16	16	16

** . Correlation is significant at the 0.01 level (2-tailed).

Key: X1- Frequency of Principals' Enforcement of Personal Hygiene Practices; B, C and D-Indicators of students' safety in public secondary schools.

Table 10 shows a Pearson Product Moment Correlation Test Analysis which generated correlation coefficients of $r_1 = 0.574$, $r_2 = 0.583$ and $r_3 = 0.523$ with corresponding p-values of 0.001, 0.001 and 0.003 respectively. This further indicates that there is a statistically significant relationship between principals' enforcement of personal hygiene practices and the safety of students in schools. This indicates that, when school leaders prioritize hygiene, they set a standard that promotes the well-being of students and staff. Principals who consistently enforce hygiene protocols, such as regular handwashing, the use of sanitizers, and proper disposal of waste, reduce the likelihood of spreading infectious diseases.

This helps protect students from preventable illnesses, including flu, colds, and more severe outbreaks. Moreover, enforcing hygiene practices ensures that the school is a safe space for learning, free from health risks that could lead to absenteeism or even long-term health complications. Schools that uphold hygiene standards foster a sense of responsibility and awareness among students, teaching them the importance of cleanliness in preventing infections. Principals who lead by example, offering clear guidelines and necessary resources, play a pivotal role in establishing these norms. In essence, when principals actively enforce personal hygiene practices, they not only enhance student safety but also contribute to creating a school environment where learning can thrive without the disruption of health-related concerns. This practice ultimately ensures the holistic development of students in a safe and supportive setting.

4.4.2 Thematic Analysis

However, during the interviews, the principals replied on the opposite by saying that they frequently keep safe water available in taps for the students. Principal, P1, remarked;

At secondary school, I provide clean water for all the staff and students to reduce rates of diseases that are associated with sanitation.

On their behalf, the Sub-county Directors of Education also associated themselves with the view of the principals that heads of schools should ensure personal hygiene is observed and clean water is made available for consumption at school. In their reaction, however, the interviewees endorsed the view that principals should ensure learners are well-groomed in preparation for their safety in public secondary education. Just as the quantitative data, these views also validate the assertions of Sharma et al (2021) that clean and safe water accessibility along with due hygiene practice plays a significant role in the achievement of student safety and health at large.

Such opinions also corroborate those by Johnson and Richards (2020) that, in most public secondary schools, accessibility of clean and safe water is not a guarantee. Most of these schools are without working water taps, thus compelling the students to utilize dangerous sources of water. Such mixed findings reflect the fact that the enforcement of students' hygiene behaviors stands to be crucial in fending off viruses and bacteria that could otherwise endanger the health of the student population. In essence, provision of clean and safe water, the enforcement of appropriate standards of grooming, promotion of good personal mannerisms and application of good hygiene behaviors stand to be critical in ensuring safety of students in public secondary schools.

4.5 Adherence of Principals to Handwashing Practice and Students' Safety in Public Secondary Schools

The research aimed at exploring the impact of principals' conformity with handwashing behaviors and safety of learners at public secondary schools. Descriptive data were gathered from educators and results are reported in Table 11;

Table 11: Teachers' Views on the Influence of Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools

Test Items	Ratings				
	SA %	A %	U %	D %	SD %
In public secondary schools, students are required to use soaps while washing their hands as a way of keeping them safe	49.6	5.0	4.3	33.8	7.2
In public secondary schools, students are advised to dry their hands after washing to avoid attracting pathogens and thus remain safe	52.5	12.2	2.9	26.6	5.8
Public secondary school principals advise students to wash their hands before and after eating	44.6	15.8	4.3	28.8	6.5
To ensure their safety, students in public secondary schools are advised to wash their hands after visiting toilets	59.7	7.9	5.8	21.6	5.0
Handwashing practices adopted by public secondary school principals have ensured that students are safe from any infections	58.3	9.3	5.8	18.9	7.7

Source: Field Data (2025)

Table 11 indicates that 129(49.6%) of the teachers strongly agreed that, in public secondary schools, students must use soaps during hand washing as a means of keeping them safe whereas 13(5.0%) agreed, 12(4.3%) were undecided, 88(33.8%) disagreed whereas 19(7.2%) strongly disagreed. Over fifty percent, 136(52.5%), of the teachers strongly agreed on the opinion that, in public secondary schools, students are counselled to dry their hands after washing to avoid attracting germs and thus keep safe whereas 32(12.2%) agreed, 8(2.9%) were undecided, 69(26.6%) of the teachers disagreed whereas 16(5.8%) strongly disagreed. The research indicated that 116(44.6%) of the teachers strongly agreed on the opinion that principals guide students to wash their hands prior to eating and after eating whereas 41(15.8%) were in agreement, 12(4.3%) were undecided, 75(28.8%) disagreed whereas 17(6.5%) strongly disagreed.

Over fifty percent, 155(59.7%) of the teachers strongly agreed on the opinion that, for the sake of their safety, students in public secondary schools should wash their hands after visiting toilets whereas 21(7.9%) agreed, 16(5.8%) were undecided, 56(21.6%) disagreed whereas 13(5.0%) strongly disagreed. Over fifty percent, 151(58.3%) of the teachers strongly agreed on the opinion that handwashing standards set by public secondary school principals have ensured students were immune to any infections whereas 25(9.3%) agreed, 16(5.8%) were undecided, 49(18.9%) disagreed whereas 20(7.7%) strongly disagreed.

They ratify the legitimacy of the fact that hand hygiene and hygiene activities in public secondary schools have continued to be a critical factor in ensuring the safety and health of learners. In other words, correct handwashing, including the use of soap and drying, continues to be important in curtailing the spread of pathogens. This study unearthed the fact that there are key practices relating to hand hygiene by secondary schools, namely the supervision of handwashing by school heads before eating, after eating, after visiting toilets, and the application of the right soap for proper hygiene. The use of soap during handwashing is emphasized as a critical step in curtailing the spread of infectious diseases in schools.

These results affirm those of a study conducted by Luby, Agboatwalla and Painter (2020), which found that handwashing with the use of soap was much more efficient at lowering the spread of bacterial and viral pathogens than handwashing without the use of a cleansing agent. Soap helps to emulsify grease and soil, and scrubbing enhances mechanical shedding of pathogens from the hands (Luby et al., 2020). Thus, heads of public secondary schools who promote the use of soap are complying with global health guidelines for the reduction of infection exposure by students. Furthermore, drying hands after washing has been identified as another critical factor in preventing the

spread of pathogens. This is also consistent with the findings of research conducted by Brett, Goss and Smith (2019) which also revealed that hands can become recontaminated if not properly dried, as moisture on the skin provides an ideal environment for bacteria and viruses to thrive. In public secondary schools, students are typically advised to use air dryers or disposable towels to ensure their hands are completely dry, reducing the likelihood of pathogen transmission (Brett et al., 2019). This indicates that hand hygiene is particularly crucial before and after eating, as it prevents foodborne illnesses.

Just as in the case of a trial by Jensen, Brown and Peterson (2018), which also proved that handwashing before eating meals is a key intervention in the reduction of prevalence of gastro-intestinal infections among learners, handwashing after visiting the toilet cannot be emphasized more. According to World Health Organization (WHO), handwashing with soap and water after visiting the toilet is one of the most effective methods of limiting the spread of infections such as diarrhea and respiratory infections (WHO, 2021). Consistent adherence to handwashing in schools after visiting toilets is thus viewed as essential in the preservation of learners' health.

These are in agreement with the fact that handwashing or hand hygiene activities advocated for in public secondary schools, involving the use of soap, drying of hands and washing prior to and after consumption and toilet usage, contribute significantly to the safety of students. As public health recommendations highlight, these activities are central in the reduction of the spread of infectious diseases in educational establishments.

4.5.1 Inferential Analysis

To verify influence of principals' adherence to handwashing practices on safety of students in public secondary schools, data were collected from the 16 principals of the

sampled public secondary schools on how often (Very Often = 5, Often = 4, Sometimes = 3, Rarely = 2 and Never = 1) they ensure that students adhere to handwashing practices and students' safety of students in public secondary schools in terms of number of cases of food poisoning, injuries and sanitation-related diseases for the last five years (2020-2024). Findings are shown in Table 12:

[Table 12: Frequency of Principals' Adherence to Handwashing Practices and Students' Safety in Public Secondary Schools

Frequency of Principals Adherence to Handwashing Practices	Students' Safety		
	Number of Food Poisoning Cases	Number of Injuries to Students	Number of Sanitation-related Diseases
2	12	23	33
2	14	34	27
3	9	39	23
2	11	35	38
5	5	40	37
1	8	47	19
1	9	77	21
3	5	57	34
2	5	59	41
3	3	38	34
5	8	44	28
5	8	37	23
5	9	65	24
2	11	71	25
2	13	45	26
3	14	61	28

Source: Field Data (2025)

Table 12 illustrates that, at public secondary schools where principals are often careful about encouraging students to practice handwashing, safety has relatively improved with fewer cases of food poisoning, injury to students and cases of sanitation-related issues being reported. This again indicates that, if regular handwashing by students takes place, the infection of harmful bacteria and viruses is decreased, and fewer cases of food poisoning result.

This is very much needed in areas where communally eating and shared facilities are a way of life because foodborne diseases often take place due to unhygienic manners. Besides, handwashing helps in reduced contagious diseases spread, which otherwise can cause widespread absenteeism and health crises. You can see that those who have focused on hand hygiene have had fewer incidents of students becoming unwell, lessening the demand on the health system and better attendance overall. Improved sanitation practices also mean fewer incidents of injury and health-related events.

By having students wash their hands, they are less likely to bring harmful germs into their system, which means fewer infections and wound or abrasion-related complications. Overall, a focus on hygiene practice in the secondary setting improves the health and well-being of students, promotes a healthier classroom environment, and develops a safer atmosphere that can accommodate educational and extracurricular activities, ultimately improving overall safety and health for the whole school community. Data above were created in Pearson's Product Moment Correlation Test Analysis and results are presented in Table 13:

Table 13: Relationship between Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools

		X2	B	C	D
X2	Pearson Correlation	1	.584**	.577**	.508**
	Sig. (2-tailed)		.001	.001	.004
	N	16	16	16	16
B	Pearson Correlation	.584**	1	.959**	.932**
	Sig. (2-tailed)	.001		.000	.000
	N	16	16	16	16
C	Pearson Correlation	.577**	.959**	1	.964**
	Sig. (2-tailed)	.001	.000		.000
	N	16	16	16	16
D	Pearson Correlation	.508**	.932**	.964**	1
	Sig. (2-tailed)	.004	.000	.000	
	N	16	16	16	16

** . Correlation is significant at the 0.01 level (2-tailed).

Key: X2- Frequency of Principals' Adherence to Handwashing Practices; B, C and D- Indicators of students' safety in public secondary schools.

Table 13 features a Pearson Product Moment Correlation Test Analysis which had correlation values of $r_1 = 0.584$, $r_2 = 0.577$ and $r_3 = 0.508$ with p-values of 0.001, 0.001 and 0.004 correspondingly. This goes on to establish further that the conformity of principals to handwashing habits holds a statistically significant relation with the safety of learners at school. This goes on to imply that, by putting hygiene at the forefront of their agenda, they set a standard which the principals, being focal points of steering the school, can establish the tone through for health-focused activities in the school environment. By themselves encouraging and observing appropriate handwashing methods, it directly influences the overall health and safety of learners.

Handwashing is a low-cost and highly-effective way of limiting the spread of viruses and bacteria. A school that takes hand hygiene seriously shows that it recognizes the way illness can spread and takes proactive steps to minimize risk. Research repeatedly indicates that where school leaders place significant value on handwashing, students themselves follow the practice more often. This includes having hand sanitizer stands in place, educating students on the right techniques, and encouraging regular handwashing. In those schools where principals set the example themselves and have good hygiene practice in place, fewer cases of infectious diseases-related absenteeism occur.

This link indicates the significant value of leadership in influencing the health behaviors of staff and students, which in turn directly shapes overall safety throughout the school. In addition, principals who set health and safety first create a culture of concern and responsibility, which enhances students' knowledge of hygiene practice. Consequently, schools where handwashing practice is good and headed by motivated principals see fewer outbreaks occur, thus creating a safer, healthier environment for everyone.

4.5.2 Thematic Analysis

Throughout the interviews, the principals and the Sub-county Directors of Education replied in agreement with the opinion that, in the public secondary schools, handwashing practices tend to be followed as a means of ensuring that learners are safe.

Principal, P2, remarked;

In my secondary school, I ensure that students use soaps while washing their hands before and after eating, after visiting toilets and dry them after washing to avoid attracting pathogens and thus remain safe.

Just like mixed results for the quantitative, these views also assert that different handwashing behaviours practiced and applied by school heads are significant in assisting in maintaining the safety and health of students. These views also credit views by Luby et al (2020) that the use of soap during handwashing is significantly more effective in preventing the spread of bacterial and viral pathogens compared to handwashing with water. Brett et al (2019) also showed that, at public secondary school, students are generally advised to use air dryers or by the use of disposable towels to ensure hands are dry, thus reducing the spread of a pathogen.

This continues to imply that hand hygiene is most critical before eating, since it assists in preventing the spread of foodborne diseases. In other words, these mixed findings reflect the fact that handwashing practiced and implemented by principals including the use of soap, hand drying and handwashing before eating and use of toilets and after eating and toilet usage assists in ensuring safety for students.

4.6 Enforcement of Toileting Habits by Principals and Student Safety in Public Secondary Schools

The study sought to determine how principals' enforcement of toileting practices influence safety of students in public secondary schools.

Descriptive data were collected from teachers, organized and summarized into specific thoughts. Findings are presented in Table 14;

Table 14: Teachers' Views on the Influence of Principals' Enforcement of Toileting Practices on Safety of Students in Public Secondary Schools

Test Items	Ratings				
	SA %	A %	U %	D %	SD %
Students have been safe from infections since principals enforce use of tissue papers while attending the toilets and latrines	55.4	14.4	5.8	16.5	7.9
In public secondary schools, students are advised to use urinals properly to be safe from infections	59.7	7.2	3.6	26.6	2.9
Public secondary school principals advise students to exercise bowel control to be safe at all times	53.2	8.6	4.3	21.6	12.3
In public secondary schools, there is insistence on wearing shoes or sandals while attending to the toilets	51.8	13.7	3.6	27.3	3.6
To ensure students' safety, public secondary school principals ensure that detergents are available in the toilets for their use	51.4	10.8	5.0	22.0	10.8

Source: Field Data (2025)

Table 14 indicates that 144(55.4%) of the teachers strongly agreed that the students have remained safe from infections since the principals insist on tissue paper usage during a visit at the toilets and latrines while 38(14.4%) agreed, 16(5.8%) were undecided, 43(16.5%) disagreed while 21(7.9%) strongly disagreed. It was shown by the study that 147(59.7%) of the teachers strongly agreed with the opinion that, in public secondary schools, the students are told to properly utilize urinals in order to be safe against infections while 19(7.2%) agreed, 10(3.6%) were undecided, 69(26.6%) disagreed while 8(2.9%) strongly disagreed. It was shown by the study that 138(53.2%) of the teachers strongly agreed that public secondary school principals counsel students to practice bowel control in order to be safe at all times while 23(8.6%) agreed,

12(4.3%) were undecided, 56(21.6%) disagreed while 32(12.3%) strongly disagreed. Most, 135(51.8%), of the teachers strongly agreed with the view that, in public secondary schools, insistence on wearing shoes or sandals is needed for visiting the toilets whereas 36(13.7%) agreed, 10(3.6%) were undecided, 71(27.3%) disagreed whereas 10(3.6%) strongly disagreed. Most, 134(51.4%), of the teachers strongly agreed with the view that, for the sake of students' safety, public secondary school principals are careful in ensuring that the toilets contain detergents for their use whereas 28(10.8%) agreed, 13(5.0%) were undecided, 57(22.0%) disagreed whereas 28(10.8%) strongly disagreed. These findings depict that the promotion of student health and safety in public secondary schools is a priority, and principals have a critical role to play in ensuring hygiene behaviors that contribute to infection control.

One such practice is the enforcement of the use of tissue papers while attending toilets and latrines. These findings are consistent with the findings of research carried out by Lynch, Thompson and Smith (2018) which revealed that availability and use of toilet paper reduce the spread of infectious diseases, particularly those associated with improper sanitation. A study conducted by Heidari, Samadi and Fadaei (2020) also established that inadequate hygiene during bathroom visits, such as the improper use of urinals, can facilitate the transmission of urinary tract infections (UTIs) and other diseases. Therefore, principals who ensure the regular use of tissue papers promote a cleaner environment, lowering the risk of infections.

The correct use of urinals is another hygiene measure emphasized by school principals. A study carried out by Musau, Nguu and Ochieng (2021) also found that improper use of urinals, particularly by younger students, findings in contamination of the surrounding area, promoting the spread of diseases like cholera, typhoid, and dysentery. Encouraging students to use urinals correctly is, therefore, an essential component in the

fight against infection in school settings. In schools where principals have enforced clear hygiene rules for using toilets and urinals, the rates of infections among students have notably decreased, according to a report by the World Health Organization (2022). Another practice that has proved vital in guaranteeing the safety of learners against infections is the demand for bowel control. Educating learners on the practice of bowel control, more prominently in public toilets, remains one of the most efficient precautionary measures against intestinal infections, which are often propagated by poor sanitation. Fecal-oral transmission, which is more often induced by the unsanitary handling of human excreta, remains one of the leading propagators of diseases such as hepatitis A, giardiasis, and other stomach infections (VanDerslice & Briscoe, 2017).

A study conducted by Kelly, Jacobs and Thompson (2020) also established that educational institutions with well-operated toilet facilities that promote bowel control practice have fewer health outbreaks. Wearing of shoes or sandals to toilets is also another precautionary practice highly promoted by administrators of educational institutions. Research conducted by Nwankwo, Ibeh and Odu (2022) revealed a significant association of wearing shoes with a decreased risk of soil-transmitted helminths (STHs) and other parasitic infections. The shoes avoid direct contact of the students with contaminated floors, especially in unkept school toilets.

Consequently, principals who insist on students wearing shoes or sandals during maintenance of toilets give a good defense against infections that would otherwise be acquired through contact of feet with infected soil or floors (Chao, Jones & Lowry, 2018). Lastly, having detergents provided in toilets is a critical practice for infection prevention. Clean toilets with regular supplies of detergents minimize the number of dangerous pathogens that cause diseases. As Mureithi, Otieno and Mwangi (2019) established in their research, schools with a steady provision of cleaning materials,

including detergents, experience fewer infections in their students. Detergents aid in removing bacteria and viruses, generally maintaining a clean environment in the school. Such findings indicate that principals who insist on the usage of tissue paper, correct usage of the urinal, bowel control, wearing of shoes, and provisions of detergents in public secondary schools effectively minimize infection risk among students. Such hygiene activities, appropriately practiced, constitute a basis for ensuring a safer school environment for promoting the health and well-being of learners.

4.6.1 Inferential Analysis

To establish influence of principals' application of toileting practice on students safety in public secondary schools, data were captured from the 16 sampled public secondary school principals on frequency (Very Often = 5, Often = 4, Sometimes = 3, Rarely = 2 and Never = 1) of their application of toileting practice among students and students' safety of students in public secondary schools in number of incidents of food poisoning, injuries and sanitation-related diseases for the past five years (2020-2024). Results are presented in Table 15:

Table 15: Frequency of Principals' Enforcement of Toileting Practices and Students' Safety in Public Secondary Schools

How often Principals Enforce Toileting Practices	Students' Safety		
	Number of Food Poisoning Cases	Number of Injuries to Students	Number of Sanitation-related Diseases
3	12	23	33
4	14	34	27
4	9	39	23
2	11	35	38
5	5	40	37
5	8	47	19
4	9	77	21
3	5	57	34
3	5	59	41
4	3	38	34
3	8	44	28
5	8	37	23
3	9	65	24
2	11	71	25
1	13	45	26
3	14	61	28

Source: Field Data (2025)

Table 15 indicates that, in secondary school contexts where principals tend to insist on conformity to toileting practice, safety is relatively better since fewer cases of food poisoning, injury among students and sanitation-related cases are reported. This suggests that, by ensuring students often follow the right toileting practice prior to meals, for example, by thoroughly washing their hands, the chances of contamination by bacteria or by viruses are reduced. This precautionary measure in promoting sanitation effectively reduces the chances of foodborne diseases, which used to be a frequent problem in contexts of poor hygiene practice. In addition, appropriate toileting procedures tend to minimize injuries and illnesses among students. Schools that adhere to cleanliness and maintenance of the restrooms minimize the risks of slip-and-fall hazards due to unsanitary conditions.

Clean facilities also promote students' overall health, lowering the number of diseases associated with poor sanitation, including urinary tract infection or skin rash, which can be occasioned by dirty toilets. This further means that compliance with these practices not only encourages hygiene but a healthier educational environment. With less case of poor sanitation and fewer injuries, the safety of the overall school is highly enhanced. Consequently, students are more concentrated on their studies because they are aware that their health is being given priority. In a nutshell, the application of toileting practices has proved a vital step in enhancing not only physical safety but health in public secondary schools. Data above were computed in the Pearson's Product Moment Correlation Test Analysis and results are presented in Table 16:

Table 16: Relationship between Principals' Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools

		X3	B	C	D
X3	Pearson Correlation	1	.613**	.593**	.618**
	Sig. (2-tailed)		.023	.044	.019
	N	16	16	16	16
B	Pearson Correlation	.613**	1	.959**	.932**
	Sig. (2-tailed)	.023		.000	.000
	N	16	16	16	16
C	Pearson Correlation	.593**	.959**	1	.964**
	Sig. (2-tailed)	.044	.000		.000
	N	16	16	16	16
D	Pearson Correlation	.618**	.932**	.964**	1
	Sig. (2-tailed)	.019	.000	.000	
	N	16	16	16	16

** . Correlation is significant at the 0.01 level (2-tailed).

Key: X3- Frequency of Principals' Enforcement of Toileting Practices; B, C and D- Indicators of students' safety in public secondary schools.

Table 16 shows a Pearson Product Moment Correlation Test Analysis which generated correlation coefficients of $r_1 = 0.613$, $r_2 = 0.593$ and $r_3 = 0.618$ with corresponding p-values of 0.023, 0.044 and 0.019 respectively. This further indicates that there is a statistically significant relationship between principals' enforcement of toileting practices and the safety of students in schools. This indicates that toileting practices are crucial in managing student bathroom breaks in a manner that ensures both the hygiene

and safety of students. These practices include regulated access to restrooms, the monitoring of students during bathroom visits, and ensuring the cleanliness and maintenance of these facilities. The role of the principal in enforcing such practices is crucial because they set the tone for school policy and have the authority to implement and monitor these practices consistently. Principals who actively enforce safe toileting practices are more likely to reduce incidents such as bullying, inappropriate behavior, and other safety-related concerns in restrooms.

When proper supervision and guidelines are established, students are less likely to engage in unsafe behaviors during bathroom breaks, which in turn leads to a safer environment for all students. Furthermore, effective enforcement of toileting practices can contribute to maintaining hygienic conditions that promote student health, preventing the spread of germs and infections. Poorly maintained restroom facilities or lax enforcement can lead to situations where students may become vulnerable to health risks and potential harm. In contrast, schools where principals prioritize cleanliness and safety in toileting practices see fewer incidents of health issues and bullying, creating an environment where students feel secure and well-cared-for.

This also means that the link between the adherence of principals to toileting procedures and safety of students is evident. Diligent principals who adhere strictly to appropriate toileting policies minimize hazards relating to the usage of toilets considerably, hence maintaining the safety of students in educational institutions and their overall psychological well-being.

4.6.2 Thematic Analysis

The principals and Sub-county Directors of Education (TSC & MoE) during the interviews also replied affirmatively for the opinion that principals have ensured that learners follow toileting routines. Principal, P4, replied;

In my secondary school, I have ensured that students use tissue papers while attending the toilets and latrines, use urinals properly to be safe from infections, exercise bowel control to be safe at all times, wear shoes or sandals while attending to the toilets and that detergents are available in the toilets for their use.

These views were supported by the Sub-county Directors of Education who also stated that principals are expected to ensure that toileting practices are enforced and adhered to ensure that students are safe. These views further support the viewpoints held by Lynch et al (2018) who noted that availability and use of toilet paper reduce the spread of infectious diseases, particularly those associated with improper sanitation. Just like quantitative findings, these views also support those expressed by Heidari et al (2020) that inadequate hygiene during bathroom visits, such as the improper use of urinals, can facilitate the transmission of urinary tract infections (UTIs) and other diseases. These mixed findings underscore the fact that principals' toileting practices are paramount in ensuring students' safety in schools. In other words, principals who enforce the use of tissue paper, proper urinal use, bowel control, the wearing of shoes, and the availability of detergents in public secondary schools significantly reduce the risk of infections among students.

4.7 Principals' Waste Management Practices and Safety of Students in Public Secondary Schools

The investigation endeavored to determine whether principals' disposal behavior informs safety of learners at public secondary schools. Descriptive data were gathered from teachers, prepared and synthesized into descriptive thoughts. Results are presented in Table 17;

Table 17: Teachers' Views on the Influence of Principals' Waste Management Practices on Safety of Students in Public Secondary Schools

Test Items	Ratings				
	SA %	A %	U %	D %	SD %
Students have been safe from infections since public secondary schools encourage proper disposal of faeces	47.1	13.6	7.2	20.6	11.5
In public secondary schools, students are advised to use dustbins while disposing wastes to avoid infections and accidents	50.4	14.4	5.8	20.1	9.3
Public secondary school principals encourage students to burn solid wastes to avoid accidents	48.2	6.5	4.3	14.4	26.6
In public secondary schools, there is provision of safe waste disposal materials to protect students from injuries and infections	63.3	12.9	7.2	13.7	2.9
To ensure students' safety, public secondary school principals ensure that detergents are available in the toilets for their use	47.9	11.2	4.6	25.1	11.2

Source: Field Data (2025)

Table 17 shows that 122(47.1%) of the teachers strongly agreed with the view that students have remained safe from infections because public secondary schools teach them on correct disposal of faeces while 36(13.6%) agreed, 19(7.2%) were undecided, 54(20.6%) disagreed but 30(11.5%) strongly disagreed. In excess of fifty percent, 131(50.4%), of the teachers strongly agreed with the view that, in public secondary schools, students are trained to use dustbins in disposal of wastes for the purpose of evading infections and accidents while 38(14.4%) agreed. Nevertheless, 16(5.8%) were undecided, 53(20.1%) disagreed but 25(9.3%) strongly disagreed. The study unearthed that 125(48.2%) of the teachers strongly agreed with the view that public secondary school principals train students on burning solid refuse for the purpose of evading accidents while 17(6.5%) agreed, 12(4.3%) were undecided, 38(14.4%) disagreed but 69(26.6%) strongly disagreed.

Majority, 164(63.3%), of the teachers strongly agreed with the view that, in public secondary schools, provision of safe disposal of refuse is practiced for the purpose of avoiding students from receiving infections and injuries however 34(12.9%) agreed, 18(7.2%) were undecided, 36(13.7%) disagreed but 8(2.9%) strongly disagreed. The study unearthed that 125(47.9%), of the teachers strongly agreed with the view that, for the purpose of ensuring students' safety, public secondary school principals ensure that detergents were present in the toilets for their usage however 30(11.2%) agreed, 12(4.6%) were undecided, 66(25.1%) disagreed but 30(11.2%) strongly disagreed. These observations bring to the fore the fact that safe disposal of feces continues to be a leading factor for the prevention of spread of diseases in schools.

This is consistent with the findings of research carried out by Smith and Brown (2020) which also found that public secondary schools have increasingly encouraged students to properly dispose of faecal waste to curb the spread of infections, particularly those caused by bacterial contamination, such as cholera and dysentery. This further lends credence to the findings of research conducted by Odhiambo (2022) highlights that proper disposal techniques, including the use of latrines and the enforcement of hygiene rules, have significantly reduced the incidence of gastrointestinal diseases among students in public secondary schools. In addition to the proper disposal of faeces, the availability of dustbins in key locations is critical in maintaining school hygiene.

Dustbins are a convenient way for students to dispose of garbage, which reduces littering that can be a breeding ground for bacteria and other dangerous pathogens (Ngugi, 2021). Schools that promote the usage of dustbins further work towards lowering the chances of infections and accidents due to contact with unhygienic conditions. A further significant element of garbage disposal is the disposal of solid waste in a safe manner.

Most principals have policies of encouraging the burning of solid trash as a way of lowering environmental pollution and removing possible hazards (Jones & Evans, 2019). Waste disposal by incineration reduces the risk of cuts by sharp objects and minimizes contact of poisonous substances, including plastic waste, which can cause respiratory or skin infections (Harrison, 2020). Furthermore, the application of safe disposal materials, including gloves and sanitary materials, is a standard method in educational facilities for the safety of learners during waste disposal. As suggested by Murungi (2023)'s work, application of these safety materials reduces the risk of learners having cuts due to handling of waste. Furthermore, application of safe disposal guides serves as a teaching experience for learners, encouraging them to adopt better hygiene standards in their personal lives.

Provision of cleansing chemicals, including detergents, in the toilets of schools is also a preventive approach towards creating a clean and health-friendly environment. Research indicates that provision of appropriate cleansing chemicals is vital for encouraging good hygiene and infection control in toilets at school (Okumu & Wambui, 2021). School principals have specifically ensured that detergents are always provided in school toilets, which helps to curb the spread of germs and bacteria that cause infections.

In essence, these discoveries indicate that proper disposal of refuse in secondary schools is a critical factor in the prevention of infection and injury among secondary school students. By advocating for the appropriate disposal of faeces, assuring accessibility of dustbins, encouraging the burning of refuse, offering safe refuse disposal materials, and supplying toilets with appropriate cleaning products, the principals of these schools are putting a great effort into ensuring the health and safety of learners.

4.7.1 Inferential Analysis

To cross-validate the effect of principals' waste disposal conducts on students' safety at public secondary schools, data were also captured from the 16 principals of sampled public secondary schools on a frequency (Very Often = 5, Often = 4, Sometimes = 3, Rarely = 2 and Never = 1) of their implementing waste disposal conducts among students and students' safety of students in public secondary schools in number of incidents of food poisoning, injuries and sanitizer-related diseases in the last five years (2020-2024). Results are shown in Table 18:

Table 18: Frequency of Principals' Enforcement of Waste Management Practices and Students' Safety in Public Secondary Schools

How often Principals Enforce Waste Management Practices	Students' Safety		
	Number of Food Poisoning Cases	Number of Injuries to Students	Number of Sanitation-related Diseases
2	12	23	33
1	14	34	27
2	9	39	23
1	11	35	38
3	5	40	37
3	8	47	19
3	9	77	21
2	5	57	34
3	5	59	41
5	3	38	34
2	8	44	28
4	8	37	23
4	9	65	24
1	11	71	25
1	13	45	26
2	14	61	28

Source: Field Data (2025)

Table 18 indicates that, in public secondary schools where principals frequently ensure that waste disposal practices are followed at all times, safety has relatively improved since fewer incidents of food poisoning, student injuries, and sanitation-related illnesses

are reported. This means that, in schools, where principals frequently encourage and direct good disposal of waste practices, there has been a significant reduction in overall safety, with fewer incidents of food poisoning, student injury, and sanitation-related infections. Waste disposal is very important since it does contribute significantly to helping create a safe and healthy environment for staff and students. Waste disposal involves a number of activities, including the appropriate disposal of food remains, cleaning of facilities at school, and handling of dangerous chemicals.

Schools that implement comprehensive waste management systems often experience fewer cases of food poisoning. For instance, when food waste is disposed of appropriately and kitchens are kept clean, the likelihood of contamination is reduced. Regular checks on food storage areas and hygiene practices among food handlers ensure that food remains safe for consumption, significantly lowering the risk of foodborne illnesses. Moreover, the proper disposal of waste also prevents the accumulation of dangerous materials, which could cause physical harm to students. When waste is left unattended or improperly handled, it can attract pests like rats and flies, which can spread disease or lead to injuries.

Such hazards are diminished in schools where Waste Management is of much concern, hence fewer cases of injury. Clean and tidy school environments around also lower the chances of students tripping or falling on illegally disposed waste. In addition, Waste Management helps improve sanitation. Clean latrines, safe water sources, and sanitary common areas all contribute to fewer sanitation-related diseases. Schools which have appropriate waste disposal tend to have fewer incidents of diseases such as diarrhea and respiratory infections. This again suggests that appropriate waste disposal practices in public secondary schools by proactive principals contribute to a cleaner, safer, and healthier environment, with fewer incidents of food poisoning, injuries and hygiene-

related diseases. Data above were computed in the Pearson's Product Moment Correlation Test Analysis and results are presented in Table 19:

Table 19: Relationship between Principals' Waste Management Practices and Safety of Students in Public Secondary Schools

		X4	B	C	D
X4	Pearson Correlation	1	.562**	.582**	.598**
	Sig. (2-tailed)		.021	.023	.039
	N	16	16	16	16
B	Pearson Correlation	.562**	1	.959**	.932**
	Sig. (2-tailed)	.021		.000	.000
	N	16	16	16	16
C	Pearson Correlation	.582**	.959**	1	.964**
	Sig. (2-tailed)	.023	.000		.000
	N	16	16	16	16
D	Pearson Correlation	.598**	.932**	.964**	1
	Sig. (2-tailed)	.039	.000	.000	
	N	16	16	16	16

** . Correlation is significant at the 0.01 level (2-tailed).

Key: X4- Frequency of Principals' Enforcement of Waste Management Practices; B, C and D-Indicators of students' safety in public secondary schools.

Table 19 shows a Pearson Product Moment Correlation Test Analysis which generated correlation coefficients of $r_1 = 0.562$, $r_2 = 0.582$ and $r_3 = 0.598$ with corresponding p-values of 0.021, 0.023 and 0.039 respectively. This further indicates that there is a statistically significant relationship between principals' waste management practices and the safety of students in schools. This further indicates that effective waste management practices in schools contribute to maintaining a clean, hygienic environment, which in turn reduces health risks and potential hazards that could endanger students' well-being.

Principals who prioritize waste management often implement systems to properly segregate, dispose of, and recycle waste materials. This can reduce the chances of waste-related accidents such as slips, trips, and falls, which are common in schools with improperly disposed waste. Additionally, hazardous materials such as chemicals or sharp objects that may pose a danger to students are better managed, preventing potential injuries or exposure to harmful substances.

Beyond physical safety, proper waste management in schools can help mitigate the spread of diseases. Schools, being places where large groups of students interact, are susceptible to the rapid spread of infections. When principals establish relevant hygiene and disposal of waste actions, the risks of contamination by the waste materials, for instance, food scraps or medical waste, are eliminated effectively. This assists in creating a clean environment, thus the overall safety of students through the avoidance of health-related hazards. Such incidents-free history is revealed by those educational institutions whose leaders are actively participating in the disposal of waste. Such a great impact of these actions thus serves to bring home the significance of placing a high priority on the disposal of waste by a school's leaders not only for environmental protection but also for their learners' safety and health preservation.

4.7.2 Thematic Analysis

During the interviews, the principals and Sub-county Directors of Education (TSC & MoE) also stated that waste management is crucial in ensuring students' safety in schools. Principal, P4, noted;

At school, we encourage proper disposal of faeces, use of dustbins during disposal of refuse, burning of solid refuse, ensuring that disposal materials are accessible to avoid injuring or infecting the students and also ensuring the supply of detergents in the toilets for their use

On their behalf, Sub-county Directors of Education indicated that heads of schools must employ good waste disposal practice in order to ensure safety of learners at all times. Mixed findings of these observations further validate the fact that the application of waste disposal practice by heads of schools plays a crucial role in ensuring safety of learners. In other words, good disposal practice of waste in public secondary schools is a vital factor in ensuring safety of learners from infections and injury. By enhancing proper disposal of faeces, ensuring the presence of dustbins, encouraging burning of

solid trash, supplying safe disposal material, and stocking toilets with required cleaning materials, principals of schools are doing a lot to protect the health and safety of learners.



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter is a summary of the overall major findings of the research, conclusions, recommendations and avenues for further studies based on the research objectives.

5.1 Summary of Research Findings

This paragraph gives a description of the results of the studies of the research aims which were; examining the situation of safety of learners in public secondary schools and the impact of principals' enforcement of personal cleanliness, hand hygiene, toileting and garbage disposal practices on safety of learners in public secondary schools.

5.1.1 Status of Safety of Students in Public Secondary Schools

The research revealed that safety for students became a significant factor in most public secondary schools due to reported cases of food poisoning, injury, and diseases from poor sanitation. This means that encouraging safety for students in public secondary schools is a must due to recurrent cases of food poisoning, injury, and diseases due to poor sanitation. Most of the schools struggle to encourage good hygiene standards, which are a cause of preventable diseases. Inappropriate handling and storage of foods have led to incidents of food poisoning, which are a health risk to students.

5.1.2 Enforcement of Teachers' Personal Hygiene Behaviors and Students' Safety by Principals in Public Secondary Schools

The research discovered that principals enforce students' personal hygiene with the object of promoting personal safety during their stay at school. They include the supply of clean water at the taps and dining halls, personal grooming of the students, and good personal etiquette aimed at ensuring their safety.

This confirms the theory that personal hygiene activities are very essential in helping control the spread of viruses and bacteria which is dangerous to the health of the students. By observing these hygiene activities, the schools can minimize the number of students who contract infectious diseases and their health and safety be ensured. This confirms the assertion that provision of clean and safe water, proper personal grooming, promotion of personal etiquette, and good hygiene policies are the cornerstone to ensuring the safety of the student in public secondary schools. Evidence for this can be derived from the Pearson Product Moment Correlation Test Analysis which revealed significant correlation between principals enforcing hygiene policies and the safety of the learners (p values 0.001, 0.001, 0.003). This shows that the more the leaders of the schools focus on hygiene, they similarly promote a good environment for improved wellbeing of the staff and the learners.

5.1.3 Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools

From the mixed findings, principals observe handwashing as a hygiene practice for safety in public secondary schools. They hygienically instruct students to use soaps while washing hands before and after eating, after visiting toilets and dry hands to prevent pathogen infection. This further indicates that the consistent handwashing behavior of students minimizes the transmission of bacteria and viruses which leads to food poisoning. Where there is communal eating and shared facilities, foodborne illnesses occur due to a lack of sanitation and cleanliness. Moreover, the washing of hands minimizes the spread of contagious diseases that cause widespread absenteeism and a health crisis. This was corroborated with Pearson Product Moment Correlation Test Analysis which proved there is significant correlation between principals' adherence to handwashing practices and students' safety in schools (p-values 0.001,

0.001 and 0.004). Such evidence suggest that hygiene standards are upheld when a school leader emphasizes health and sanitation policies. School leaders greatly influence the health practices environment of the school. When principals promote the needed to follow proper handwashing guidelines, it directly affects the health and safety of students. Typically, washing one's hands is a very effective way of preventing the transmission of both viruses and bacteria. A school environment where hygiene is given priority signifies that there is an appreciation on how some ailments can be transmitted and the need to take adequate steps to mitigate the risks involved. Moreover, these mixed findings indicate that the handwashing routines practiced by principals are particularly important in preventing foodborne illnesses. Stated differently, these mixed findings are indicative of the fact that hygiene practices enforced by principals such as soap usage, hand drying, pre- and post-eating and toilet use, washing, are vital in safeguarding students' health.

5.1.4 Enforcement of Toileting Practice by Principals and Student Safety in Public Secondary Schools

Principals' enforcement of toileting practices determines the level of safety of students in public secondary schools during toileting. These practices include provisions of tissue papers, control of urinal usage, exercised bowel control, wearing of shoes or sandals while attending to the toilets, and the provision of detergent for use in the toilets. These findings underscore the fact that health and safety in public secondary schools is of vital importance, and that principals are instrumental in fostering infection control through hygienic practices and proper sanitation. This emphasizes that principals who implement policies regarding the use of tissue paper, control of urinal usage, bowel control, wearing of shoes, and provision of detergent in public secondary schools mitigate exposure to infections among students.

When adopted, these hygiene measures become effective in establishing a safe school environment which promotes students' health and wellbeing. This was reinforced by the results of Pearson's Product Moment Correlation Test Analysis which showed that enforcement of toileting practices by the principals has a statistically significant impact on the safety of students in schools (p-values 0.023, 0.044 and 0.019). This means further that adequate managing of student bathroom breaks entails hygiene and safety commensurate with the age of the children.

With appropriate supervision and direction, students tend not to engage in unsupervised risk behaviors during toileting breaks which enhances overall safety for students. In addition, closely monitored hygiene practice can be of significance in maintaining a healthy environment by reducing germs and infection amongst students. Where toilet facilities are not adequately secured or policies not enforced, that can be a source of exposure to health and safety risks for learners. This means more that strict application of the principals' policies on toileting practice and learners' safety is quite clear. Strict application of good toilet policies can be foreseen to reduce risks implicated by toilets and foster learners' physical the mental health at schools.

5.1.5 Waste Management Practice of Principals and Students' Safety in Public Secondary Schools

The research finding unveiled that the principals dispose of the wastes in divergent ways which they believe promote the safety of students in public secondary schools. Such behaviors entail asking the students to burn solid wastes, facing the face wastes in a suitable way, using dustbins while releasing the wastes and ensuring that the waste disposal materials, for example, the dustbins are of a protective nature to prevent the students from receiving injuries and infections and also ensuring that detergents are present in the toilets for them.

Evidently, safety entails more than not being injured; garbage disposal in schools is a vital element of safety and health that serves to avert illnesses. Infections could easily develop in schools because of the high number of students converging at a single point. Pearson's Product Moment Correlation Test Analysis further established that a statistical correlation exists between principals' garbage disposal methods and a safe environment for students in schools ($p=0.021, 0.023, 0.039$). This implies that a significant correlation exists between the two principals' garbage disposal methods and students' safety in schools. This implies that sound waste disposal policies for public secondary schools not only offer a safe school for learners, but a clean atmosphere which reduces contact with adverse health risks.

Usually, principals who are concerned about issues of waste management will establish clean segregation, disposal, and recycling facilities, which, in their own right, restrict accidents involving waste, including slips, trips, and falls, which are endemic in discarded waste schools. Furthermore, the improved control of dangerous substances like chemicals or sharp tools that could be dangerous to learners will avert possible harms, or contact with injurious substances. Principals who implement policies of cleanliness and appropriate disposal of wastes and trash considerably reduces the risk of infection due to food remnants and medical trash. This not only assists in maintaining cleanliness, but also improves the health of the learners by lowering health-related occurrences.

Schools whose principals proactively manage waste have proved to be less incident-prone in issues concerning hygiene and accidents. In consideration of this fact, waste administration should be considered an important element of a school's safety plan. Such a factor demonstrates the extent to which leaders of schools should be concerned

with environmental considerations concerning the administration of waste in a bid to foster the health and safety of children.

5.2 Conclusions

Based on the study findings, safety of students' wellbeing in a number of public secondary schools has gained significant concern due to incidents of reported food poisoning, injury as well as sanitation diseases outbreak. In order to address these concerns, the principals have adopted a variety of sanitation enforcement policies including personal hygiene, handwashing, toileting, and refuse disposal. As based on the study, principals enforce students' personal hygiene with a purpose of maintaining personal safety during their stay at school. These activities incorporate the protection of water at the taps and dining halls, attendance of students' grooming through maintaining good etiquette all aimed at ensuring safety.

From the analysis, it is clear that public secondary school principals perceive handwashing as a hygiene aspect critical to safety. Students are trained on washing their hands with soap after having a meal, visiting the toilet, and drying hands to reduce infection with pathogens. How much principals insist on toileting behaviors affects the safety of the students in public secondary schools during toileting. Such behaviors include provision of tissue papers, regulation of consumption of the urinal, control of bowel movements, wearing of shoes or sandals to the toilet, and provision of toilet cleansing detergents.

Various principals have distinct methods of managing waste in hopes of improving students' safety in public secondary schools, the research findings indicated. Others are urging students to set solid wastes on fire, directing the rubbish to appropriate bins, utilizing dustbins for disposal, and ensuring that garbage bins for rubbish are not

harmful and students are not injured or infected due to entry of wastes. Besides that, they ensure that detergents for cleansing are available for their use in toilets.

5.3 Findings of the Study

This final section specifies the practice, policy and future research recommendations of the present study.

5.3.1 Recommendations for Practice

The study concludes with the following recommendations;

- i. In relation to adherence by principals to personal hygiene conducts and safety of learners at public secondary schools, the research recommends that principals should develop and implement a comprehensive health and hygiene policy, including the setting of distinct guidelines, follow-ups at regular intervals, and training of learners.
- ii. On the adherence of principals to handwashing practices and students' safety at public secondary schools, the research suggests that the principals ought to continue being steadfast on ensuring adherence to prescribed handwashing practice by the students for the sake of their safety at all occasions.
- iii. On principals' enforcement of toileting practices safety of students in public secondary schools, the study recommends that the principals should ensure schools have adequate number of toilets as per the number of students and enforce stricter adherence to toileting rules and regulations.
- iv. In relation to disposal of refuse by principals and safety of students at public secondary schools, the discussion implies that principals should continue ensuring that students adhere strictly to refuse disposal procedures in an effort to promote their safety at all times.

5.3.2 Recommendations for Policy

The Ministry must ensure strict adherence to sanitation measures which aim at ensuring safety for students at school.

5.3.3 Recommendations for Further Research

There should be a study conducted on the degree to which principals' attitude on sanitation practice affects students' safety in public secondary schools.

- i. A study could be conducted to examine the influence of training of principals on safety management on students' safety in public secondary schools.
- ii. There needs to be a study on the impact of principals' experience in terms of management on the safety of learners at public secondary schools



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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

February 2025

Dear Sir/Madam,

RE: PERMISSION TO CARRY OUT RESEARCH

I am a student taking a course in Master of Education in Educational Administration, Leadership and Management of Mount Kenya University. I am required to submit as parts of my research work assessment, research on: Influence of Principals' Sanitation Management Practices on Safety of Students in Public Secondary in Kangema Sub-county, Murang'a County, Kenya. To achieve this, you have been selected to participate in the study. I kindly request the respondents to, fully, participate in the study. This information will be used purely for academic purpose and your name will not be mentioned in the report. Findings of the study, shall upon request, be availed to you.

Your assistance and co-operation will be highly appreciated.

Thank you in advance.

Yours faithfully,

Irungu Julius Mwangi

APPENDIX III

QUESTIONNAIRE FOR SECONDARY SCHOOL TEACHERS

Dear respondent,

The researcher is a student undertaking a degree course in Master of Education in Educational Management, Leadership and Administration at Mount Kenya University.

My research topic is: **Influence of Principals' Sanitation Management Practices on Safety of Students in Public Secondary in Kangema Sub-county, Murang'a County, Kenya.**

Section A: Demographic Information

Instruction: Please tick against your most appropriate answer and fill the spaces provided.

1. Gender: Male Female
2. Level of education
Diploma Degree Post-graduate

Section B: Safety of Students in Public Secondary Schools

1. State the number of cases among students in your secondary school for the last five years (2019-2023)
Food poisoning Injuries
Sanitation-related diseases

Section C: Principals' Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools

1. On a scale of 1-5, rate how often your principal undertakes the following personal hygiene practices for students.

Personal Hygiene Practices	VO	O	S	R	N
Provision of safe water in taps					
Provision of safe water in dining halls					
Ensuring good students' grooming					
Enforcing personal mannerisms while coughing, eating etc.					

Key: **VO**-Very Often **O**: Often **S**: Sometimes **R**: Rarely **N**: Never

2. Rate to what extent you agree with the following statements on the influence of your principal' enforcement of personal hygiene practices on safety of students

Key: **SA**-Strongly Agree **A**-Agree **U**-Undecided **D**-Disagree **SD**-Strongly Disagree

No.	Test Items	SA	A	U	D	SD
		5	4	3	2	1
1	In my school, there is provision of safe water in taps which ensured that students are safe					
2	To ensure students' safety in my school, there is provision of clean and safe water in the dining halls					
3	My principal ensures that students are well groomed which has guaranteed their safety					
4	In my school, we enforce personal mannerisms among students as way of ensuring their safety					
5	In my school, students have been safe since there has been enforcement of effective hygiene practices					

Section D: Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools

1. Please, rate how often your principal undertakes the following handwashing practices

Handwashing Practices	VO	O	S	R	N
Use of soaps					
Drying of hands					
Washing hands before and after eating					
Washing of hands after visiting toilets					

Key: **VO**-Very Often **O**: Often **S**: Sometimes **R**: Rarely **N**: Never

2. Rate the extent to which you agree with the statements on the influence of your principal' adherence to handwashing practices on safety of students

No.	Test Items	SA	A	U	D	SD
		5	4	3	2	1
1	In my school, we ensure that students use soaps while washing their hands as a way of keeping them safe					
2	In my school, students are advised to dry their hands after washing to avoid attracting pathogens and thus remain safe					
3	My principal advises students to wash their hands before and after eating					
4	To ensure their safety, students in my school are advised to wash their hands after visiting toilets					
5	Handwashing practices adopted by my principal have ensured that students are safe from any infections					

Section E: Principals' Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools

1. Please, rate how often your principal undertakes the following toileting practices

Toileting Practices	VO	O	S	R	N
Use of tissue papers					
Proper use of urinals					
Bowel control					

Key: **VO**-Very Often **O**: Often **S**: Sometimes **R**: Rarely **N**: Never

2. Rate the extent to which you agree with the statements on the influence of your principal's enforcement of toileting practices on safety of students

No.	Test Items	SA	A	U	D	SD
		5	4	3	2	1
1	My students have been safe from infections since the principal enforces use of tissue papers while attending the toilets and latrines					
2	In my school, students are advised to use urinals properly to be safe from any infections					
3	My principal advises students to exercise bowel control to be safe at all times					
4	In my school, there is instance on wearing shoes or sandals while attending to the toilets					
5	To ensure students' safety, my principal ensures that detergents are available in the toilets for their use					

Section F: Principals' Waste Management Practices and Safety of Students in Public Secondary Schools

1. Please, rate how often your principal undertakes the following waste management activities

Waste Management Practices	VO	O	S	R	N
Disposal of faeces					
Use of dustbins					
Burning of solid wastes					
Provision of safe waste disposal materials					

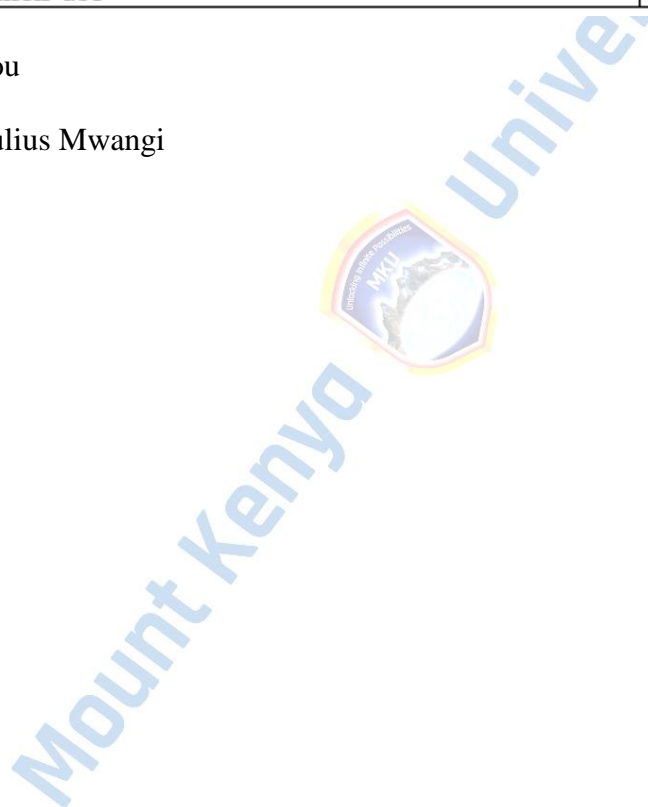
Key: VO-Very Often O: Often S: Sometimes R: Rarely N: Never

2. Rate the extent to which you agree with the statements on the influence of your principal's waste management practices on safety of students

No.	Test Items	SA	A	U	D	SD
		5	4	3	2	1
1	My students have been safe from infections since the school encourages proper disposal of faeces					
2	In my school, students are advised to use dustbins while disposing wastes to avoid infections and accidents					
3	My principal encourages students to burn solid wastes to avoid accidents					
4	In my school, there is provision of safe waste disposal materials to protect students from injuries and infections					
5	To ensure students' safety, my principal ensures that detergents are available in the toilets for their use					

Thank you

Irungu Julius Mwangi



APPENDIX IV
INTERVIEW GUIDE FOR PRINCIPALS

Dear respondent,

The researcher is a student undertaking a degree course in Master of Education in Educational Management, Leadership and Administration at Mount Kenya University. My research topic is: **Influence of Principals’ Sanitation Management Practices on Safety of Students in Public Secondary in Kangema Sub-county, Murang’a County, Kenya.**

Section A: Demographic Information

1. Gender:.....
2. What is the highest level of education?.....

Section B: Safety of Students in Public Secondary Schools

1. How many cases of food poisoning, injuries and sanitation-related diseases have you had among students in your secondary school for the last five years (2019-2023)?

Section C: Principals’ Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools

1. How often do you enforce personal hygiene practices among students?
2. What has been the influence of your enforcement of personal hygiene practices on safety of students?

Section D: Principals’ Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools

1. How often do you ensure that students adhere to handwashing practices?
2. To what extent has adherence to handwashing practices influenced safety of students in your secondary school?

Section E: Principals' Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools

1. How often do you enforce toileting practices among students?
2. How have your enforcement of toileting practices influenced safety of students in your school?

Section F: Waste Management Practices and Safety of Students in Public Secondary Schools

1. How often do you undertake waste management?
2. Which kind of waste management activities does your school undertake?"
3. To what extent has your waste management practices influenced safety of students in your school?

Thank you

Irungu Julius Mwangi



APPENDIX V

INTERVIEW GUIDE FOR SUB-COUNTY DIRECTORS OF EDUCATION

Dear respondent,

The researcher is a student undertaking a degree course in Master of Education in Educational Management, Leadership and Administration at Mount Kenya University.

My research topic is: **Influence of Principals' Sanitation Management Practices on Safety of Students in Public Secondary in Kangema Sub-county, Murang'a County, Kenya.**

Section A: Demographic Information

1. Gender:.....
2. What is the highest level of education?.....

Section B: Safety of Students in Public Secondary Schools

1. How many cases of food poisoning, injuries and sanitation-related diseases have you had among students in public secondary schools in your sub-county for the last five years (2019-2023)?

Section C: Principals' Enforcement of Personal Hygiene Practices and Safety of Students in Public Secondary Schools

1. How often do principals enforce personal hygiene practices among students in public secondary schools in your sub-county?
2. What has been the influence of principals' your enforcement of personal hygiene practices on safety of students in public secondary schools in your sub-county?

Section D: Principals' Adherence to Handwashing Practices and Safety of Students in Public Secondary Schools

1. How often do principals ensure that students adhere to handwashing practices in public secondary schools in your sub-county?

2. To what extent has principals' adherence to handwashing practices influenced safety of students in in public secondary schools in your sub-county?

Section E: Principals' Enforcement of Toileting Practices and Safety of Students in Public Secondary Schools

1. How often do principals enforce toileting practices among students in public secondary schools in your sub-county?
2. How has principals' enforcement of toileting practices influenced safety of students in public secondary schools in your sub-county?

Section F: Waste Management Practices and Safety of Students in Public Secondary Schools

1. How often do principals undertake waste management in public secondary schools in your sub-county?
2. Which kind of waste management activities do public secondary schools in your sub-county undertake?"
3. To what extent have principals' waste management practices influenced safety of students in public secondary schools in your sub-county?

Thank you

Irungu Julius Mwangi

APPENDIX VI

ETHICAL CLEARANCE FROM MOUNT KENYA UNIVERSITY



REF: MKU/ISERC/4752
TO: IRUNGU JULIUS MWANGI

Date: 10 February 2025

REG: MED/2019/45738

Dear Sir/Madam,

RE: INFLUENCE OF PRINCIPALS' SANITATION MANAGEMENT PRACTICES ON SAFETY OF STUDENTS IN PUBLIC SECONDARY SCHOOLS IN KANGEMA SUB-COUNTY, MURANG'A COUNTY, KENYA

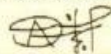
This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3474**. The approval period is **10/02/2025 - 09/02/2026**.

This approval is subject to compliance with the following requirements:

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

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

Yours sincerely,



Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC



APPENDIX VII
**INTRODUCTION LETTER FROM THE SCHOOL OF POSTGRADUATE
STUDIES OF MOUNT KENYA UNIVERSITY**



DIRECTORATE OF GRADUATE STUDIES

MED/2019/45738

10th February, 2025

*National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki, Upper Kabete
P.O Box 30623- 00100
NAIROBI, KENYA*

Dear Sir/Madam,


RE: IRUNGU JULIUS MWANGI- REGISTRATION NO. MED/2019/45738

The purpose of this letter is to introduce the above named student who is pursuing **Master of Education** in the **Department of Educational Management and Curriculum Studies** in the **School of Education**.

The title of the research is **"Influence of Principals' Sanitation Management Practices on Safety of Students in Public Secondary Schools in Kangema Sub-County, Murang'a County, Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **February, 2025 and April, 2025**.

Any assistance accorded to the student will be highly appreciated.

Thank you.


Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

*Mount Kenya University
P.O. Box 342-01000, THIKA
Director of the Directorate
of Graduate Studies*

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
Chartered and ISO 9001 : 2015 Certified Institution.

Unlocking Infinite Possibilities


APPENDIX VIII

AUTHORIZATION LETTER FROM NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION, NACOSTI

Republic of Kenya
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 570888

RESEARCH LICENSE




This is to Certify that Mr. JULIUS MWANGI IRUNGU of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Muranga on the topic: **INFLUENCE OF PRINCIPALS' SANITATION MANAGEMENT PRACTICES ON SAFETY OF STUDENTS IN PUBLIC SECONDARY SCHOOLS IN KANGEMA SUB-COUNTY, MURANG'A COUNTY, KENYA for the period ending : 21/February/2026.**

License No: NACOSTI/P/25/416196

570888
Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

APPENDIX IX

RESEARCH AUTHORIZATION LETTER FROM COUNTY COMMISSIONER,
MURANG'A



REPUBLIC OF KENYA
OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR AND NATIONAL ADMINISTRATION

Telephone: 060-2030467
Email: cc.muranga@interior.go.ke

COUNTY COMMISSIONER
MURANG'A COUNTY
P. O. BOX 7-10200
MURANG'A

When replying please quote

* REF.NO.PUB.24/11/VOL.IV/82

24TH FEBRUARY, 2025

Deputy County Commissioner
KANGEMA SUB-COUNTY.

RE: RESEARCH AUTHORIZATION –JULIUS MWANGI IRUNGU.

In reference to **NACOSTI/P/25/416196** vide **RESEARCH LICENCE** dated **21STFEBRUARY 2025** from the National Commission for Science, Technology and Innovation regarding the above subject, **JULIUS MWANGI IRUNGU** Is hereby authorized to carry out research on **"Influence Of Principals' Sanitation Management Practices On Safety Of Students In Public Secondary School In Kangema Subcounty In Muranga County"** For The Period Ending **21STFEBRUARY 2026.**

Please accord the necessary support.

DAVID K. KASYOKA
For: COUNTY COMMISSIONER
MURANG'A COUNTY

APPENDIX X

RESEARCH AUTHORIZATION LETTER FROM COUNTY DIRECTOR OF
EDUCATION, MURANG'A



REPUBLIC OF KENYA
MINISTRY OF EDUCATION
State Department for Basic Education

Email: cdemuranga@gmail.com
Telephone: 060 2030227
When replying please quote

COUNTY DIRECTOR OF EDUCATION
P.O BOX 118 – 10200
MURANG'A

REF: MGA/CTY/EDU/RESEARCH/GEN/64/VOL.IV/72 24th February, 2025

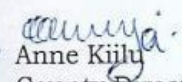
IRUNGU JULIUS MWANGI
C/O MT. KENYA UNIVERSITY
REG: MED/2019/45738

RE: RESEARCH AUTHORIZATION

The County Director of Education is in receipt of your letter dated 24th February 2025, Introduction letter from Mount Kenya University and a copy of the Research License from NACOSTI Ref No.570888 license number **NACOSTI/P/25/416196** dated 21/2/2025 requesting for authority to carry out research on ***“Influence of Principals’ Sanitation Management Practices on Safety of Students In Public Secondary schools in Kangema Sub County, Murang’a County, Kenya”***.

Permission is hereby granted to carry out the research in Murang’a County for the period ending **21/2/2026** as requested.

You are kindly advised to submit a copy of the final research report to this office.


Anne Kiilu
County Director of Education
MURANG'A



APPENDIX XI
THE MAP OF KANGEMA CONSTITUENCY SHOWING KANGEMA SUB-COUNTY

