



SCHOOL OF TECHNOLOGY AND SOCIAL SCIENCES

**INVESTIGATING THE CHALLENGES OF IMPLEMENTING THE FREE EDUCATION
POLICY ON SANITATION LEVELS IN MONZE, ZAMBIA: A CASE STUDY OF
MANUNGU SECONDARY SCHOOL.**

MATILDAH MBULO

BBA20221199

**A dissertation submitted to the School of Technology and social sciences and in partial
fulfillment of the requirements for the award of a Bachelor of Arts in Development Studies.**


2025

COPYRIGHT

Copyright 2025. All rights reserved. No portion of this dissertation can be duplicated, or stored by in a retrieval system or transmitted in any form be it electronic, mechanical, photocopying, recording, or otherwise-without the author's or the University of Lusaka's prior consent. This study is presented to the university of Lusaka in partial satisfaction of the requirements for the Bachelor of Arts in Development Studies. The report's material represents the author's views and findings rather than necessarily those of the Institution.

DECLARATION

I, Matildah Mbulo, declare that the dissertation “Investigating the Challenges of implementing the Free Education Policy on Sanitation levels in Monze, Zambia: a case study of Manungu Secondary School” is entirely original with no submissions for credit toward a degree or test at any other university. Except as noted by reference, all materials used in this dissertation have been appropriately cited, and the work is wholly original.

Signature: 
Date: 20 January, 2026.

Supervisor: Mr Oscar Mwale

Signature: 

Date: 10th March 2026

ACKNOWLEDGEMENTS

I would like to sincerely thank and acknowledge Mr. Mwale, my supervisor, for his patient guidance and corrections during the course of my dissertation.

I'm grateful to my friends, Mukuka, Mary and Chola who have been instrumental to this journey. Their encouragement has been so invaluable as it has motivated me and helped me to strive for excellence. I appreciate their unwavering support.

Special thanks to my mother Concepta Haangoma, who has consistently shown interest in my work, asking questions and offering valuable insights that have pushed me to strive for excellence. Her curiosity and enthusiasm have been a driving force behind my progress.

Thanks to my brother Andrew Himpyali who also has been very instrumental to the completion of my dissertation. I'm eternal grateful.

I'm truly grateful for the support and encouragement I have received from these individuals, I could not have successfully completed this dissertation without them.

DEDICATION

First and foremost, my dissertation is dedicated to my Lord and savior, Jesus Christ, who is my anchor in all I do and achieve in life. I also dedicate it to Christopher Mbulo, my dad, whom I believe would have loved to see me excel against all odds in this life.

ABSTRACT

This study examined the challenges of implementing the free education policy on sanitation levels at Manungu School in Monze District, Zambia. The study focused on staff-to-toilet and student-to-toilet ratios, the adequacy of handwashing facilities, the availability of sanitary bins in female toilets, and the impact of increased enrolment on classroom air quality. The study targeted pupils, teachers, support staff, and head teachers, with a sample of 261 respondents drawn from a total population of 3,024. A mixed methods approach was employed, where quantitative data were analyzed using descriptive statistics and qualitative data were analyzed thematically.

The findings revealed that the free education policy led to increased enrolment and staffing levels without a corresponding expansion of sanitation and classroom infrastructure. As a result, toilets were overcrowded, handwashing facilities were inadequate, sanitary bins were absent in female toilets, and classrooms were congested with poor ventilation. These challenges disproportionately affected female pupils and female staff, leading to discomfort, compromised hygiene practices, reduced instructional time, and an overall decline in the quality of the learning and working environment.

The study concluded that although the free education policy has improved access to education, inadequate sanitation infrastructure undermines its effective implementation and sustainability. The study recommends increasing the number of toilets, improving handwashing facilities, providing sanitary bins in female toilets, and upgrading classroom infrastructure to match enrolment levels. Future research should involve multiple schools and longer study periods to better understand the long-term sanitation implications of the free education policy in Zambia.

TABLE OF CONTENTS

COPYRIGHT	i
DECLARATION	ii
ACKNOWLEDGEMENTS	iii
DEDICATION	iv
ABSTRACT	v
LIST OF TABLES	ix
LIST OF FIGURES	x
ABBREVIATIONS	x
CHAPTER ONE	1
INTRODUCTION AND BACKGROUND	1
1.1 Introduction	1
1.2 Background of Study	2
1.3 Statement of the Problem	2
1.4 General Objective	3
1.5 Specific Objective	3
1.7 Significance of Study	3
1.8 Scope of Study	4
1.9 Delimitation of the Study	5
1.10 Limitation of the Study	5
1.11 Definition of key terms and concepts	6
1.12 Chapter Summary	6
CHAPTER TWO	8
LITERATURE REVIEW	8
2.0 Overview	8
2.1 Empirical Review	8
2.1.1 Staff toilet Ratio	8
2.1.2 Student to Toilet Ratio	9
2.1.3 Hand washing facilities	10
2.1.4 Girls' Hygiene Support (Sanitary bins)	11
2.1.5 Air Quality	11
2.2 Theoretical Framework	12
2.2.1 Environmental Theory	12

2.2.2	Human Capital Theory	13
2.2.3	The WASH (Water, sanitation and Hygiene Theory)	14
2.2.4	Conceptual Framework	15
2.2.5	Gaps in Literature	15
CHAPTER THREE		17
RESEARCH METHODOLOGY		17
3.0	Overview	17
3.1	Research Approach	17
3.2	Research Design	17
3.3	Study Population	17
3.4	Sample Size and Sampling Technique	18
3.4.1	Sample Size	18
3.4.2	Sampling Technique	21
3.5	Data Collection Methods	23
3.6	Data Collection Instruments	23
3.7	Data Analysis	23
3.8	Reliability and Validity	23
3.9	Ethical Consideration	24
3.10	Limitations of the Study	25
3.11	Chapter Summary	25
CHAPTER FOUR		26
DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS		26
4.0	Overview	26
4.1	Response Rate	26
4.2	Demographic Information	27
4.2.1	Sex of Respondents	27
4.2.2	Level of Schooling of Respondents	28
4.2.3	Grade/Class of Pupil Respondents	28
4.3	Enrolment Levels under the Free Education Policy	29
4.3.1	Student Enrolment by Level and Sex	29
4.4	Toilet Facilities for Pupils	30
4.4.1	Gender Segregation of Toilet	30
4.4.2	Adequacy of Pupil Toilet ratio	30

4.5 Sanitation Facilities for Teachers and Support Staff	32
4.5.1 Staff Toilet Ratios	32
4.5.2 Adequacy of Staff Sanitation Facilities	33
4.5.3 Implications for Free Education Policy Implementation	34
4.6 Handwashing Facilities and Hygiene Practices	35
4.6.1 Availability of Handwashing Facilities Near Toilets	35
4.6.3 Availability of Water for Handwashing	36
4.6.4 Availability of Soap for Hand-washing	36
4.6 Girls’ Hygiene Support and Sanitary Bins	37
4.6.1 Availability of Sanitary Bins in Female Toilets	37
4.6.2 Disposal Methods for Sanitary Materials	37
4.7 Water Supply and Treatment	38
4.7.1 Availability of Water Supply	38
4.7.2 Water Treatment Practices	39
4.8 Classroom Conditions and Air Quality	39
4.8.1 Classroom Congestion Levels	39
4.8.2 Ventilation and Air Quality	40
4.9 DISCUSSION OF FINDINGS	41
4.9.1 Enrolment Growth and Sanitation Demand under the Free Education Policy	41
4.9.2 Pupil-to-Toilet Ratios and Sanitation Adequacy	42
4.9.3 Gender Sensitivity and Inequality in Staff Sanitation Facilities	42
4.9.4 Handwashing Facilities, Soap Availability, and Hygiene Compliance	43
4.9.5 Menstrual Hygiene Management and Girls’ Educational Participation	43
4.9.6 Water Availability, Treatment, and Health Implications	44
4.9.7 Classroom Overcrowding and Air Quality	44
4.9.8 Synthesis of Findings	45
4.9.9 Chapter Summary	45
CHAPTER FIVE	46
SUMMARY, CONCLUSION AND RECOMMENDATION	46
5.0 Overview	46
5.1 Summary of Findings	46
5.1.1 Staff Toilet Ratio and Student Toilet Ratio	46
5.1.2 Handwashing Facilities Adequacy	46

5.1.3 Availability of Sanitary bins	47
5.1.4 Classroom Overcrowding and Air Quality	47
5.2 Conclusions	47
5.3 Recommendations	48
5.3.1 Recommendations for School Administration and Management	48
5.3.2 Recommendations for Teachers and Support Staff	49
5.3.3 Recommendations for Pupils	49
RECOMMENDATIONS FOR FUTURE RESEARCH	50
REFERENCES	52
APPENDICES	56

LIST OF TABLES

Table 1. Study Population	17
Table 2. Population Distribution for Manungu Primary School	18
Table 3. Population Distribution for Manungu Secondary School	18
Table 4 Primary Students	20
Table 5. Secondary Students	20
Table 6. Primary Teachers	20
Table 7. Secondary Teachers	21
Table 8. Support Staff	21
Table 9. Head Teachers	21
Table 10. Sample Size for the Study	21
Table 11. Questionnaires Response Rate	26
Table 12. Sex Distribution of Respondents	27
Table 13. Level of Schooling of Respondents	28
Table 14. Grade/Class Distribution of Pupil Respondents	28
Table 15. Student Enrolment by Level and Sex	29
Table 16. Response Rate of Questionnaires	30
Table 17. Staff Toilet Ratios	34
Table 18. Availability of Water	36
Table 19. Availability of Sanitary Bins	37
Table 20. Disposal Methods for Sanitary Materials	38
Table 21. Availability of Water Supply	38
Table 22. Water Treatment	39
Table 23. Sanitation Observation Checklist for Manungu School	61

LIST OF FIGURES

Figure 1. Number of students and Toilets by Level and Sex	31
Figure 2. Student Toilet Ratio by Level and Sex	31
Figure 3. Number of Staffs and Toilets by Sex	32
Figure 4. Staff Toilet Ratio by Sex	33
Figure 5. Availability of Handwashing Facilities Near Toilets	35
Figure 6. Availability of Soap	36
Figure 7. Classroom Congestion	40
Figure 8. Classroom Ventilation	41

ABBREVIATIONS

UNICEF.....	United Nations Children’s Fund
WHO.....	World Health Organization
WASH.....	Wash, Sanitation and Hygiene
SDGs	Sustainable Development Goals
SPLASH	Schools Promoting Learning Achievement through Sanitation and Hygiene
OAPUB	Open Access Public Health/Publication

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

The free education policy in Zambia is essential for increasing access to education by removing financial barriers to school enrollment. This policy is really impactful as it helps people of the community to be able attain an education regardless of their social economic status (Ministry of Education,2024). Districts such as Southern Province have benefited from this policy regardless of the significant challenges, particularly in relation to sanitation levels in schools.

The strain on existing sanitation infrastructure is a challenge that is foreseen because of this there is therefore a growing concern that the policy's benefits may be compromised by inadequate infrastructure for sanitation purposes.

The importance of sanitation in schools cannot be overemphasized. Poor sanitation can lead to the spread of a number of diseases which may in turn negatively impact the health of the students, school attendance and also leading to poor performance because when the health of the students is affected it therefore, implies that they can't work at their optimum hence affecting their productivity levels, in turn affecting their grades. In Zambia, where the under-five mortality rate is high, improving sanitation in schools is paramount for reducing the burden of the disease. The world Health Organization (WHO,2018) estimates that a dollar invested in sanitation yields a return of up to \$4.30 in economic benefits.

In spite of the importance of sanitation, schools do face challenges in providing adequate sanitation facilities. Overcrowding leading to, inadequate hand washing facilities, small number of toilets to accommodate students and inadequate number of sanitary bins for female students are some of the few issues that plague the schools. The free education policy has accelerated these issues as the increased number of students put additional pressure on already-stretched resources.

The aim of this study is to investigate the challenges of implementing the free education levels on the sanitation levels in Monze, Zambia. Particularly, this study seeks to identify the current state of the sanitation infrastructure, hand washing facilities, number of toilets for boys and girls as well as the number of sanitary bins available for the female students and female teachers.

The study aims to provide possible solutions and to also add to the existing body of knowledge on the impact of the free education policy on sanitation levels in schools.

1.2 Background of Study

The implementation of the free education policy in Zambia has led to the increase of the number of students in schools, including in Monze district, by removing financial barriers to education (medafrica Times, 2024). However, this rise in student numbers has put pressure on school infrastructure, especially on the sanitation facilities, causing overcrowding and a decline in hygiene standards (OAPUB, 2020; actionaid Zambia, 2023). Insufficient toilets and handwashing facilities(taps) have resulted in poor staff-to-toilet and student-to-toilet ratios, creating unsanitary conditions that affect student health and school attendance of the students (SPLASH Project, 2025; Zambia Ministry of Education, 2025).

Female students face distinct difficulties due to the inadequate provision of sanitary bins in girls' toilets, which hinders menstrual hygiene management, potentially leading to students missing classes which in turn negatively impacts academic performance (Local Study in Monze District, 2024; World Vision International, 2004).In spite of improved access to education because of the implementation of the free education policy , limited infrastructure investment has restricted the policy's success in providing safe learning environments (Zambia Ministry of Education, 2025; medafrica Times, 2024).This study investigates the challenges the free education policy has on the sanitation levels in Monze, Zambia focusing on the handwashing facility(taps) adequacy, toilet-to-staff and student to toilet ratios, and female hygiene support(sanitary bins availability) . Addressing these issues is key to ensuring that the benefits of free education are realized in a manner that supports student well-being and their academic success.

1.3 Statement of the Problem

Zambia's free education policy has increased the school enrollment, because of these concerns about the sanitation levels have arisen. Overcrowding due to increased student numbers has exacerbated poor staff-to-toilet and student-to-toilet ratios, which undermines effective sanitation management (Chunga et al., 2022). Moreover, the inadequacy of hand washing facilities, such as taps and water pumps, persists, creating challenges for maintaining proper hygiene among students (Mwansa & Kabwe, 2023). Additionally, the availability of sanitary bins in female toilets remains insufficient, which affects menstrual hygiene management and contributes to female students missing classes (Phiri & Tembo, 2021). The air quality is actually also affected because of the increases in the number of students in the classes. This situation highlights a critical gap between policy

implementation and the capacity of existing sanitation facilities, necessitating an investigation into how the free education policy affects sanitation levels in Monze and its related infrastructural inadequacies.

1.4 General Objective

To investigate how the free education policy affects the sanitation levels, in Monze Zambia

1.5 Specific Objective

- i. To assess the staff to Toilet and student to Toilet ratios in Monze, Zambia.
- ii. To determine how the free education policy influences the inadequacy of the hand washing facilities(taps) in Monze, Zambia
- iii. To assess the availability of sanitary bins in female toilets in Monze, Zambia, in the context of the free education policy.
- iv. To investigate the impact of the free education policy on the air quality in class rooms in Monze, Zambia.

1.6 Research Questions

- i. How does the free education policy influence the Toilet to staff and student to toilet ratio, in Monze, Zambia?
- ii. How has the free education policy affected the adequacy of hand washing facilities (Taps/water pumps) in Monze, Zambia?
- iii. What influence does the free education policy have on the availability of girls' hygiene support (sanitary bins) in Monze, Zambia?
- iv. What is the correlation between the free education policy and the air quality in class rooms in Monze, Zambia?

1.7 Significance of Study

The significance of this study lies in its potential to identify how the implementation of free education policy influences the sanitation in Monze, Zambia. With increased enrolment induced by the implementation of the free education policy, schools experience overcrowding, which hence puts pressure on existing sanitation facilities. This study seeks to provide a comprehensive understanding of how free education policy indirectly impacts hygiene and sanitation levels which in turn has the ability to harm the student's wellbeing (Bwembya, 2024). This study is significant because it assesses the ratio of staff to toilets, students to toilets and air quality are crucial indicators of sanitation quality. Poor ratios can compromise cleanliness and accessibility, leading to increased

risks of infections and absenteeism. The findings could highlight critical gaps in infrastructure planning needed to support the rising school population arising from free education implementation (Zambia Ministry of Education, 2024). Another essential area of focus is the adequacy of hand washing facilities, particularly taps and water pumps, in schools.

Understanding how free education policy affects the availability of hand washing facilities will inform interventions to improve school hygiene standards (Monze Council, 2024). This study also examines the presence and accessibility of sanitary bins in female toilets, which is essential for menstrual hygiene management. Lack of sanitary bins poses challenges for female students, impacting their health, comfort, and school attendance. The research will emphasize the gendered aspects of sanitation needs within the context of expanded access to education and growing student numbers (WHO, 2023). Results from this research will contribute evidence-based recommendations to policymakers and -education stakeholders for resource allocation and infrastructure development. Improving sanitation in schools promotes a healthier learning environment, reduces disease transmission, and supports students' dignity and academic performance. This aligns with national goals to provide inclusive, quality education underpinned by safe and supportive infrastructure (UNICEF Zambia, 2024). Overall, this study fills a gap in understanding the unintended consequences of free education policy on school sanitation in Monze. It provides valuable insights to promote sustainable educational access that does not compromise student's sanitary environment. The findings will support integrated approaches combining education, sanitary environments for learning institutions, and infrastructure planning to achieve lasting improvements in student wellbeing and educational outcomes (World Bank, 2024).

1.8 Scope of Study

The study focuses on government secondary and primary schools in Monze, Zambia, where the free education policy has been implemented, with the scope of the study being Manungu Secondary School as it is where the study was conducted. It evaluated sanitation levels by assessing the staff-to-toilet and student-to-toilet ratios, the availability and adequacy of hand washing facilities (taps and water pumps), and the presence of sanitary bins in female toilets. The study will target both students and staff in order to have an in-depth understanding of the effects of the implementation of the free education policy on the sanitation levels. The research is confined to Monze district and does not include private schools or other regions in Zambia (Ministry of Education Zambia, 2024; WHO, 2023).

1.9 Delimitation of the Study

The study is confined to investigating the challenges of the implementation of the free education policy and its impact on sanitation levels in Monze district, Zambia. The geographic focus on Monze allows for an in-depth analysis of local socio-economic and infrastructural factors influencing sanitation conditions in the context of the free education policy (Ministry of General Education, 2023).

The timeframe for the study is restricted to the period starting from the introduction of the free education policy in Zambia up to the present, it focuses on the challenges posed by the policy on the sanitation and not historical information of sanitation that's not connected to the free education policy (Zambian Government, 2019).

Data collection is restricted to primary and secondary schools within the Monze district, it will include, school records of the number of staff and students, and key informant interviews. This delimitation acknowledges resource constraints and the need to focus on information relevant to Monze district (Chibuye, 2022).

The scope of the study is limited sanitation levels explicitly influenced by the free education policy, excluding broader issues of sanitation in the community. The focus is the direct link between the implementation of the policy and the sanitation levels in Monze, Zambia (Mutale and Phiri, 2020).

This study excludes other aspects of the free education policy, such as curriculum reform or teacher training, unless directly related to sanitation issues. This restriction narrows the research to sanitation levels and how the sanitation levels are affected by the free education policy (Ministry of Health, 2024).

Methodologically, the study employs qualitative and quantitative methods that are feasible within local resources, such as surveys, interviews, and document analysis (Phiri et al., 2023).

1.10 Limitation of the Study

This faces a number of limitations, firstly the study focuses on Monze district which may not fully capture the socio-economic and infrastructural contexts of other regions that face the same challenges.

The study's data is tied to the responses that will be given by school students, and staff members whose subjective response and underreporting may potentially introduce biases to the information given on the Challenges faced by the implementation of the free education policy on the sanitation levels in Monze, Zambia.

Studying the implementation of the free education policy on the sanitation levels in Monze, Zambia is a complex study that may not fully put into account other factors that influence the sanitation conditions such as local cultural practices, economic constraints and government support that may also impact the sanitation outcomes, which are not the focus of this study.

1.11 Definition of key terms and concepts

Free education Policy

This is defined as the removal of financial barriers so as to ensure that people have access to education, even they that are characterized by low income in the society (Sata,2024).

Girls' hygiene support/Sanitary bins

Girls' hygiene support, particularly through sanitary bins, is defined as the provision of dedicated waste disposal facilities in the female lavatory in order to allow girls and women to hygienically and safely dispose all used menstrual products (WHO Europe,2022; Alao and Farotimi,2022).

Hand washing facilities

Hand washing facilities are defined in this context as taps and water pumps are responsible for dispensing clean water and are easily accessible and adequate to necessitate for healthy sanitary conditions (Alao and Farotimi,2022)

Sanitation Levels

Refers to varying degrees of sanitation services that are attributed to availability, adequacy and the number of the people that use these sanitation services together (Joint Monitoring Programme,2016).

Toilet to staff ratio

The toilet staff ratio refers to the number of staff that use given units of Toilets (World Health Organization,2018).

Toilet to student ratio

The student to toilet ratio is defined as the number of students that are using a given number of toilets. An example is the toilet unit to student ratio that is recommended by the world health organization which is 1:25 for girls and 1:30 for boys. Though resource constraints have pushed different countries to adopt different standards within their capacity. (Wash4schools,2025)

1.12 Chapter Summary

The chapter introduced the study investigating the challenges of implementing the free education policy on sanitation levels in Monze, Zambia. The background of the study gave an overview how the free education has impacted sanitation levels. The statement of the problem highlighted the research gap and the need to investigate the challenges of implementing the policy on sanitation

levels. The research questions and objectives were outlined, with focus on assessing the availability and adequacy of sanitation levels to students and staff members.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This section of the research called the literature review will in depth talk about the empirical review, the theories that are relevant to the study. It will also show the gaps in literature as well as the conceptual framework which is a diagrammatic expression of what the study is all about.

2.1 Empirical Review

Empirical review is defined as a section in a study that critically examines and analyses findings from previous studies which are based on the data collected. The focus is what the researchers have found from actual data collection rather than opinions (Creswell,2014)

2.1.1 Staff toilet Ratio

Globally despite the world health organization not having a strict staff toilet ratio it recommends a staff to toilet ratio of 1:20 for usability; nevertheless, free education in underdeveloped countries frequently results in a ratio of 1:40+ due to fixed facilities amid increasing staff pupil loads (Doister et al.,2022). According to WHO and UNICEF (2021),40 percent of the staff facilities are unsanitary due to overuse, which increases the risk of infection. Staff amenities are neglected by policies that prioritize enrollment in low-income environments.

Regionally, In Sub-Saharan Africa schools have 1:50+ staff to toilet ratios, which are made worse by the free education policies that double usage without distinct staff blocks (WHO and UNICEF,2021).

This is associated with 30 percent more sanitation failures due to staff congestion in Zambia's neighbors (Duijster et al.,2022) According to regional data, teaching quality is impacted by staff dissatisfaction during surges in free education.

Zambia's National Perspective. Although 1:20 staff to toilet ratios are recommended by Zambia's wins strategy, free education since 2002 has resulted in ratios of 1:50+ nationwide, with 50 percent of schools missing ventilated staff restrooms (Ministry of General Education,2020) Growing enrollment puts pressure on common infrastructure, leading to malfunctions (Parliament of Zambia, n.d.) Policy documents show that rural communities are most affected.

2.1.2 Student to Toilet Ratio

On a global level the free education policy has massively increased the number of students in schools, because the financial barriers have been dealt with by the removal of student tuition fees; the enrollment rate has significantly increased. The increase in the enrollment rates has hence put pressure on the existing sanitation facilities. For instance, Kenya and Tanzania saw enrollment rise by about 30-40% after introducing free primary education, but over 60% of schools in Kenya struggled with inadequate sanitation such as overcrowded toilets and limited handwashing facilities (WHO/UNICEF, 2024). These pressure on sanitation facilities resulted in increased health challenges and a significant number of students missing classes, especially among girls that specially need sanitary conditions that support girls' hygiene. The global experience has shown how free education policy can increase risks of health challenges if the proper sanitary conditions are not maintained. A situation also in Monze district that has caused a surge in student numbers leading to sanitation crisis mismatch (Mwelwa, 2023).

At the regional level in Sub-Saharan Africa, countries with free education policies also face major sanitation challenges in their schools. In Ghana, the Free Senior High School policy increased the enrollment of students by 35%, but more than half of the schools had more students per toilet than recommended by WHO, which sets a limit of 25 students for every toilet. Only about 18% of these schools had working handwashing stations with soap (HRW, 2024; Sage Journals, 2025). In similar vein, Sierra Leone's free education policy has risen the primary attendance by 40%, but many rural schools lacked sanitary bins and had poor waste management (Sage Journals, 2025). These regional problems match what is reported in Zambia's Monze district, where schools face overcrowded toilets and poor Girls 'hygiene support because of the increased enrollments from free education policies (Mwelwa, 2023; Monze WASH Programme, 2024).

About 2.3 million learners enrolled in government schools by 2025 during the time the free education policy was introduced shows an increase in the number of enrolled students. (zanec.org.zm, 2025; Ministry of Education Zambia, 2024). Schools including Lumumba Basic School, Choma High School, Ndola Secondary School, and Monze Central Primary saw student numbers rise by over 40%, often with more than 70 students per classroom (Mwelwa, 2023; Local Monze District Report, 2024). However, sanitation infrastructure has lagged behind. Some schools report pupil-to-toilet ratios as high as 60 to 70 students per toilet, far exceeding the WHO recommended 25:1 ratio (Local Education Office, 2024). Only about one in four government schools have functioning handwashing facilities with soap and water available for hygiene (Ministry of

Education Zambia, 2024). This shortage of toilets, sanitary bins, and handwashing stations badly affects student health, attendance, and especially girls' well-being in school (Mwelwa, 2023).

Holistically, these statistics show that while free education policies improve the access to education and remove financial barriers, they also cause serious sanitation challenges if infrastructure improvements are not taken into consideration. This is seen globally, regionally in Sub-Saharan Africa, and nationally in Zambia, with detailed problems in Monze government schools as a direct result of growing student numbers without equal increases in school sanitation facilities.

2.1.3 Hand washing facilities

Free education policies increased the number of students, putting pressure on handwashing facilities, according to UNICEF's 2014 child to child WASH survey in Tajikistan. For every 1,000 students, most schools had just two or three handwashing stations, and the soap ran out by midmorning (UNICEF,2014) In similar vein, a 2020 study conducted in Detroit, USA by *Bowell et al* revealed that higher attendance resulted in insufficient handwashing, with soap missing on 40 percent of days and water pressure decreasing in the afternoon. This hence resulted in a 25 percent rise in sick days from diarrhea (*Bowell et al., 2020*) According to research by *Wateraid*, enrollment increased by 35 percent in 20 low-income countries, but only 50 percent of new students had access to hand washing station, which resulted in a 20 percent increase in absenteeism due to illness.

Research indicates comparable patterns in Sub-Saharan Africa. According to *Muluye et al's* study conducted in Eastern Ethiopia ,free education increased enrollment by 200 students per school ,yet no school maintained soap at hand washing stations on a daily basis .According to *Ogunyemi's* 2021 study conducted in Lagos ,Nigeria soap supplies lasted only two days and hand wash pipes ruptured due to excessive use in eight out of twelve schools (*Ogunyemi,2021*) According to *Chikwanu's* analysis of 50 schools in Malawi and Zimbabwe, hand washing buckets that served 100 children each had their maintenance halted because of financial changes to classrooms, which resulted in twice as many episodes of diarrhea(*Cikwanu,2020*)

In Monze, Zambia *Simkoza's* 2024 case study of the five selected Secondary schools in Monze District, Zambia; found that free education grew enrollment by 16 percent ,with hand washing points dropping from 1 per 50 kids to 1 per 80 kids(*Simkoza,2024*).*Phiri et al's* 2021 survey found soap at only 2.9 percent of hand washing areas, with crowds causing 15 minute lines at breaks(*Phiri et al.,2021*).*Mweetwa's* 2025 research in nearby Kabwe District showed 1 tap for 120 pupils, with

buckets emptying by lunch and soap rations cut in half leading to more skin infections(Mweetwa,2025)

2.1.4 Girls' Hygiene Support (Sanitary bins)

Globally free education policies increase the number of girls enrolled worldwide, but they also contribute to scarcity of sanitary bins, which causes poor disposal and absenteeism. Due to a lack of private trash cans in overcrowded schools, a free pad program for grades 6-10 in Nepal led to girls flushing or burning pads in public, exacerbating pollution and absenteeism(Health and Education Consultancy Africa Foundation 360,2023).Free education pads increased rural attendance in Ghana by 15 percent but enrollment expansion without bin upgrades necessitated disposal in Latrines or bushes (Boateng et al.,2017) Only 20-30 percent of schools in Asia and Africa have bins as a result of free education increases, which causes girls to miss numerous school days each year (Sommer et al.,2016)

In Southern Africa, bins are equally overburdened by enrollment pressures due to free education. No free policies in South Africa and Malawi resulted in 70 percent of schools lacking trash cans, increasing the likelihood of transactional sex as the number of students increased without access to sanitary facilities (United Nations Population Fund ,2018)

Locally since 2021, free education has doubled enrollment without bin scaling in Zambia's Monze district and other Southern Province districts. Despite the quadrupled intake, capitation grants in Monze schools neglected sanitary bins, which resulted in teacher-reported absenteeism from improvised pit Latrine disposal (Phiri,2024). According to a survey conducted by Chinyama et al.,2019 bin shortages in Southern Province schools close Monze deteriorated after the policy, and girls were absent because they were afraid of witchcraft over shared pits. Only 35 percent of schools in rural areas had bins following policy expansions, which resulted to significant absenteeism and disposal knowledge gaps (Bwalya,2025)After the free rollout, disposal from 66.5 percent before to the policy, boosting absenteeism from full bins(Ministry of General Education,2016)Monze school waste systems were strained by policy enrollment, which reduced hygiene compliance by 30-40 percent in the absence of sanitary bins(Kakumbi,2025)

2.1.5 Air Quality

Free education policies affect indoor quality and put a burden on ventilation systems worldwide. Dense lecture halls with increasing indoor pollutants are a problem for Germany's tuition free

institutions and have been connected to cognitive effects (World Population Review,2025: Sadrizadeh et al.,2022)

Overcrowding, poor air circulation and dust accumulation are results of Argentina's free Public higher education (Gilraine,2020 cited in Pulimeno et al.,2020). During heavy occupancy, Norway's free program for qualified students exacerbates indoor air quality in energy efficient buildings without filtration (Philips Foundation,2022)

Regionally, according to the University of Manchester (Philips Foundation ,2022) Finland's free education for eligible students leads to high density courses where high purifiers could reduce memory affecting toxins from enrollment spikes. Following policy booms, schools in Brazil's free Public Universities surpass air standards; reports have noted increases in particulate matter due to density (EPA,2025) Similar to sanitation air decreases elsewhere, Austria's low fee model for Europeans increases mold dangers in humid congested secondaries (LEARN Project,2025)

Locally a study conducted across Zambia's ten provinces found that the free education program increased enrollment but put pressure on not only the facilities but also on ventilation, which therefore caused dust and poor maintenance to negatively impact air quality (Mubanga and Chibwe,2024)

2.2 Theoretical Framework

This section will talk about three theories that were coined by different scholars and will also explicitly elaborate how these theories are relevant to the study.

2.2.1 Environmental Theory

Environmental Theory focuses on how physical surroundings influence human behaviors, health outcomes, and wellbeing (Gifford, 2014). It posits those changes or deficiencies in environmental conditions such as the availability of toilets, handwashing stations, and hygienic facilities in schools directly affect behaviors and health status. Within the context of Monze, Environmental Theory helps explain how inadequate sanitation infrastructure under the free education policy creates adverse conditions that hinder proper hygiene practices among students and staff. The theory further stresses that supportive, safe, and accessible environments promote healthy behaviors and reduce disease transmission. Therefore, adequate handwashing facilities and sanitary bins are not mere amenities but essential parts of environmental conditions shaping student health and wellbeing. This

understanding calls for investment not only in physical structures but also in maintaining the quality and usability of sanitation facilities.

For the study, Environmental Theory provides a concrete lens to assess the impact of sanitation infrastructure on outcomes such as hygiene practices and health status. It aligns with objectives exploring the effects of policy on inadequacy of handwashing facilities and the provision of sanitary bins by highlighting that environmental factors are critical determinants of sanitation success. Poor facility-to-user ratios and facility maintenance are seen as environmental stressors compromising health (Gifford, 2014; OECD, 2017). The theory also recognizes the broader environmental context, including community norms and institutional support affecting facility use and maintenance. Sanitation challenges often arise from neglected environmental management, lack of maintenance, and insufficient user education, which must be addressed alongside infrastructure provision. Importantly, Environmental Theory supports advocating for environmentally sustainable sanitation solutions in schools, promoting the use of eco-friendly materials, water conservation, and waste management systems to ensure long-term viability and minimal environmental impact within free education program frameworks (Gifford, 2014)

2.2.2 Human Capital Theory

The Human Capital Theory, which was first introduced by Theodore Schultz in 1961 and further developed by Gary Becker in 1964, serves as the study's compass. According to the Human Capital Theory, investments in health, education, and training improve people's productivity, abilities, and general well-being, which promotes social and economic advancement (Schultz, 1961; Becker, 1964). Because education equips people with knowledge, attitudes, and skills needed to enhance their competence in decision making processes, Becker (1964) asserts that education improves people's capacities in both economic and social domains, such as hygiene, health, and the prudent use of public resources. Schultz (1961) goes on to say that education enhances people's capacity for resource management, challenge adaptation, and the adoption of behaviors that support sustainable development.

Adequate sanitation in schools is crucial for successful learning and the development of human capital, according to the human capital perspective. The health, attendance, and focus of students are all adversely affected by unsanitary environments, which lowers the returns on educational investment. The potential advantages of free education in developing productive human capital are compromised when students miss school frequently owing to illnesses linked to poor Adequate

sanitation in schools is crucial for successful learning and the development of human capital, according to the human capital perspective. The health, attendance, and focus of students are all adversely affected by unsanitary environments, which lowers the returns on educational investment. The potential advantages of free education in developing productive human capital are compromised when students are regularly absent owing to illnesses linked to poor sanitation or when learning spaces are unclean.

Additionally, Human capital theory emphasizes that education is pivotal to the achievement of positive hygiene behaviors and proper sanitation practices. When schools lack adequate sanitation facilities, students may fail to acquire the practical knowledge and the habits that strongly related to cleanliness and the health the public. This therefore limits the role of education in promoting long term improvements in sanitation at both the household and community levels.

In the context of Monze, Zambia: Manungu Secondary School, the theory helps explain how challenges such as overcrowded schools, insufficient toilets, lack of clean water, and poor maintenance of sanitation facilities reduce the effectiveness of the free education policy. Without complementary investment in sanitation infrastructure, the policy may fall short of its goal of enhancing human capital development, as learners' health and learning outcomes are compromised.

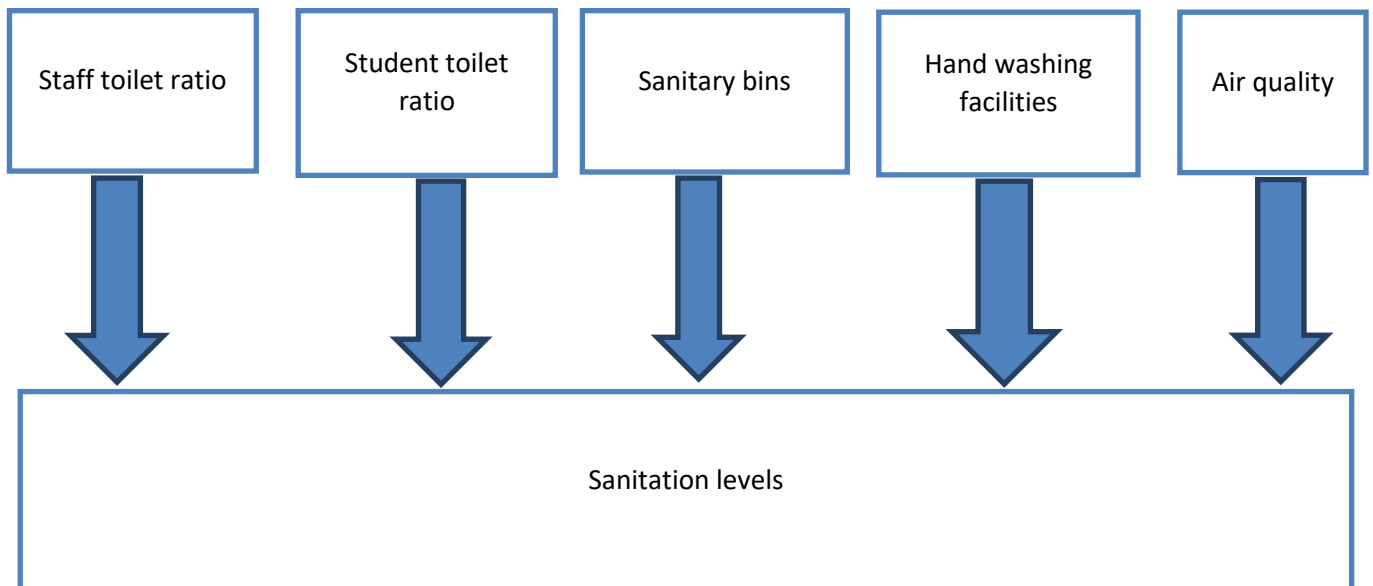
Hence, Human Capital Theory provides a strong analytical framework for understanding why addressing sanitation challenges is critical to maximizing the benefits of free education and ensuring sustainable educational and social development.

2.2.3 The WASH (Water, sanitation and Hygiene Theory)

The Water, Sanitation and Hygiene (WASH) theory is coined on public health and development thinking that links access to safe water, adequate sanitation, and proper hygiene practices to improved health, dignity, and educational outcomes. Proponents of the WASH approach, including the World Health Organization (WHO) and UNICEF, argue that schools are critical entry points for improving sanitation practices because children are both vulnerable to WASH-related diseases and effective agents of change within households and communities (WHO & UNICEF, 2019). The theory emphasizes that adequate sanitation facilities, safe water supply, and hygiene education are interdependent components; the absence of one undermines the effectiveness of the others. Scholars such as Cairncross et al. (2010) further highlight that improved sanitation reduces disease transmission, school absenteeism, and gender-related barriers to education, particularly for girls.

The WASH theory is highly relevant to the study investigating the challenges of implementing the free education policy on sanitation levels in Monze District, Zambia: a case study of Manungu Secondary School, because increased school enrolment under free education places significant pressure on existing WASH infrastructure. While the free education policy aims to enhance access to education, WASH theory helps explain how inadequate planning for sanitation can negatively affect health, learning outcomes, and school attendance. In Monze, challenges such as overcrowded toilets, insufficient water supply, and limited hygiene resources can be understood through the WASH lens as systemic gaps between policy expansion and infrastructure support (UNICEF, 2021). Applying WASH theory therefore provides a strong backing for analyzing how sanitation constraints undermine the effectiveness of free education policies and highlights the need for integrated education and WASH planning to ensure sustainable and inclusive educational environments.

2.2.4 Conceptual Framework



The conceptual framework displays the following factors: staff toilet ratio, handwashing facilities, sanitary bins and air quality as independent variables whereas sanitation levels is a dependent variable in the context of investigating challenges of implementing the free education policy on sanitation levels in Monze, Zambia: A Case Study of Manungu Secondary School.

2.2.5 Gaps in Literature

There exist many studies that acknowledge the free education policy has increased enrollment, the majority of current research focuses primarily on enrollment outcomes and access to education, with

little empirical attention paid to school sanitation as a result of increased enrollment. While the studies highlight overcrowding as a general challenge, they often do not disaggregate its effects on indicators, such as the student toilet ratio, staff toilet ratio, the availability of handwashing facilities and girls' hygiene support (sanitary bins), are frequently not broken out in research that emphasize overcrowding as a general problem. This therefore creates a vacuum about the direct impact of free education on school sanitation levels.

Secondly, prior research on school sanitation in Zambia and sub-Saharan Africa tend to examine sanitation challenges in isolation, to the broader context public health or WASH frameworks, without directly connecting them to the education policy reforms such as the free education policy. As a result, there is no actual data showing how increased student enrollment in the context of the free education policy overstretchers facilities. The study therefore bridges the gap by explicitly examining sanitation outcomes within the framework of the free education policy.

Policy documents such as those from the wins National standards emphasize acceptable toilet to student ratios, hand washing facilities and girls' hygiene support. Few studies actually assess the compliance with the standards of the implementation of the free education. Specifically, the availability of sanitary bins for students and female staff is not adequately researched on despite the importance of menstrual hygiene management, attendance, dignity and academic participation of girls.

The study is uniquely tailored to focus on the unintended sanitation challenges that are probed by the free education policy at school level. The study examines these factors; staff toilet ratio, student toilet ratio, hand washing facilities, air quality in class rooms and girls' hygiene support (sanitary bins). In comparison with previous studies, this study fills in the gaps of the WASH literature and significant gaps in the educational sector. The findings of the research are then expected to be used to inform policy implementation, infrastructure development and resource allocation in order to ensure that expanded education opportunities do not compromise student health, environmental safety and in turn the dignity of the students. Chapter two: This Chapter presents the literature used in the study. The empirical review is highlighted in this chapter talking about the Global, regional, National and finally the local aspects of the study with regards to understanding the challenges of implementing the free education policy and its impacts on Sanitation in Monze district in Zambia. The theories; systems, Environmental, Resource allocation theory are explained in depth and how relevant they're to the study. The chapter also has a conceptual framework showing the relationship between free education and the sanitation levels., finally the chapter is closed by the gaps in literature with regards to the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This section of the study explains the research design methods that the study implores. The section shall also outline and highlight the sampling techniques, sample size, study location, data collection methods, Data analysis tools, reliability and validity as well as the ethical considerations involved in the study.

3.1 Research Approach

The combination of the qualitative and Quantitative research design methods gave a comprehensive understanding. Quantitative data gave statistical insights on the investigation of the challenges of the implementation of the free education policy in Monze, Zambia. Whereas qualitative data from interviews, captured the nuanced experiences and the perceptions of the study population.

3.2 Research Design

This research implored the case study design. The design adopted to deeply explore the challenges that are specific to Manungu Secondary school in Monze district which happens to be the study Location. The approach provides an in depth focus the local context.

3.3 Study Population

The study population for this study conducted in Monze district particularly Manungu Secondary school in Zambia is 3024; the population comprises of all the students and all staff members including the support staff. This is the study population because the free education policy was implemented at Manungu secondary school and the school has both primary and secondary schools therefore it best suits the study.

Table 1. Study Population

Primary Students	Secondary Students	Primary Teachers	Secondary Teachers	Head Teachers	Support Staff	Total Population
1820	1112	39	47	2	4	3024

3.4 Sample Size and Sampling Technique

3.4.1 Sample Size.

A sample size is defined as the number of individuals that participate in a study. Also, defined as a subset of the population selected to represent the larger group.

The study used a margin error of 10 percent to calculate the sample size so as to minimize disturbances to the school's schedules and activities. The research was conducted within a short time frame, balancing data collection needs and the school operational needs was pivotal in order to ensure the smooth running of the study, avoiding the frustrations of the participants of the study was essential therefore the research was conducted in short time so as to ensure that the responses of the participants were not distorted because of the inconveniences caused by the study. This helped the study to assume more confidence in the research findings and the interpretation thereof.

DATA FOR SAMPLE SIZE CALCULATION

Population Distribution at Manungu Primary and Secondary Schools

The study population comprised pupils, teachers, support staff, and head teachers from both Manungu Primary and Manungu Secondary Schools. The population was first disaggregated by school level and sex to allow for proportionate sampling.

Table 2. Population Distribution for Manungu Primary School

Category	Male	Female	Total
Pupils	937	883	1,820
Teachers	6	33	39
Total	943	916	1,859

Table 3. Population Distribution for Manungu Secondary School

Category	Male	Female	Total
Pupils	475	637	1,112
Teachers	20	47	67
Total	495	684	1,179

CALCULATION

PRIMARY STUDENTS (N= 1820)

$$N=1820/ (1+1820*(0.1) ^2) = 95$$

Boys (n=937)

$$(937/1820) *95 =49$$

Girls (n=883)

$$(883/1820) *95 = 46$$

SECONDARY STUDENTS (N=1112)

$$N=1112/ (1+1112*(0.1) ^2) =92$$

Boys (n=475)

$$(475/1112) *92=39$$

Girls(n=637)

$$(637/1112) *92 = 53$$

PRIMARY TEACHERS (N=39)

$$N= 39/ (1+ 39*(0.1) ^2) =28$$

Male (n=6)

$$(6/39) *28=4$$

Female (n=33)

$$(33/39) *28=24$$

SECONDARY TEACHERS (N=67)

$$N=67/ (1+67*(0.1) ^2) =40$$

Male (n=20)

$$(20/67) *40=12$$

Female(n=47)

$$(47/67) *40=28$$

SUPPORT STAFF (4)

The sample size the study worked with is 4

HEADTEACHERS (2)

The sample size of the head teachers that the study worked with is 2. 1 from primary and the other from secondary.

The total sample size used in this study was 261 respondents, comprising pupils, teachers, support staff, and head teachers from both Manungu Primary and Secondary Schools. This sample size was considered adequate to generate reliable data for assessing the effects of the free education policy on sanitation levels while ensuring proportional representation across categories as presented in the breakdown below.

SAMPLE SIZE BREAKDOWN

Table 4 Primary Students

Primary Students Total number	Boys In Total	Girls In Total	Total Sample Size	Boys Sample Size	Girls Sample Size
1820	937	883	95	49	46

Table 5. Secondary Students

Secondary students Total number	Boys Total Number	Girls Total Number	Total sample size	Boys sample Size	Girls sample Size
1112	475	637	92	39	53

Table 6. Primary Teachers

Primary Teachers total number	Total number Male Teachers	Total number Female Teachers	Total Sample Size	Male Teachers sample size	Female Teachers sample size
39	6	33	28	4	24

Table 7. Secondary Teachers

Secondary Teachers total number	Total number Male teachers	Total number female teachers	Total number sample size	Male sample size	Female sample size
67	20	47	40	12	28

Table 8. Support Staff

Total number Support staff	Total number Male	Total Number Female	Total number sample size	Male sample Size	Female sample Size
4	2	2	4	2	2

Table 9. Head Teachers

Total number head Teachers	Total number Male	Total Number female	Total number Sample Size	Male sample Size	Female Sample Size
2	0	2	2	0	2

Table 10. Sample Size for the Study

Primary students Sample size	Secondary Students Sample Size	Primary Teachers Sample Size	Secondary Teaches Sample Size	Support Staff	Head Teachers	Total Sample Size For Study
95	92	28	40	4	2	261

3.4.2 Sampling Technique

Primary and Secondary School Pupils – Stratified Random Sampling

Stratified random sampling was used to select both primary and secondary school pupils. The pupils were first divided into strata based on gender (boys and girls). This sampling technique ensured that both male and female pupils were fairly represented in the study, as sanitation challenges and experiences may differ by gender. After stratification, simple random sampling was used within each

stratum to select the required number of pupils. This technique reduced sampling bias and ensured that every pupil had an equal chance of being selected. The method enhanced the representativeness of the sample and improved the reliability of the findings related to sanitation facilities and hygiene practices under the free education policy.

Primary and Secondary School Teachers – Purposive Sampling

Purposive sampling was used to select both primary and secondary school teachers. This technique was appropriate because teachers are directly involved in the daily supervision of learners and are knowledgeable about sanitation conditions, pupil population increases, and challenges arising from the implementation of the free education policy.

Teachers were selected based on their teaching experience and involvement in school management and learner welfare. The use of purposive sampling enabled the researcher to obtain detailed and relevant information from respondents who were best positioned to provide informed views on sanitation issues within the school environment.

Head Teachers – Purposive Sampling

Head teachers were selected using purposive sampling due to their leadership and administrative roles within the school. As chief policy implementers at school level, head teachers are responsible for planning, resource allocation, maintenance of sanitation facilities, and enforcement of hygiene standards.

Purposive sampling ensured that respondents with in-depth knowledge of policy implementation, budgeting, and institutional challenges were included, thereby providing rich qualitative data through interviews.

Support Staff-Census Sampling

A census sampling technique was used for the support staff. This involved including all four support staff members in the study. The census approach was appropriate due to the small population size and the critical role played by support staff in cleaning, maintaining, and managing sanitation facilities. Including all support staff helped the study to capture comprehensive information on day-to-day sanitation practices and operational challenges without sampling bias

3.5 Data Collection Methods

The data collected for this research is primary data and secondary data. The secondary data of the research is collected from articles, free education policy documents of Zambia and the primary data is collected through gathering information from interviews, observations and conducting focus group discussions on the study investigating the challenges of implementing the free education policy, in Monze, Zambia.

3.6 Data Collection Instruments

The study used questionnaires, interview guides, and focus group discussions as research instruments to investigate the challenges of implementing the free education policy in Monze, Zambia, with Manungu Secondary School as a case study.

3.7 Data Analysis

The data collected for the study was analyzed quantitatively and qualitatively in order to fully address the objectives on the challenges of implementing the free education policy on sanitation levels at Manungu School. Quantitative data from questionnaires were analyzed using descriptive statistics. The data on enrolment levels, student to toilet ratios, staff-to-toilet ratios, availability of handwashing facilities, water supply, and other sanitation indicators were summarized using frequencies, percentages, ratios, and tables. The analyzed data were provided in tables and figures for easy understanding and comparison with approved national and worldwide WASH standards.

Qualitative data obtained through interviews with head teachers, teachers, support staff and focus group discussions with pupils were analyzed thematically. Responses were transcribed, organized, and categorized into themes based on the study's objectives, such as enrollment growth, sanitation facility adequacy, hygiene habits, menstrual hygiene management, and classroom environmental conditions. Direct quotes from respondents were used to supplement and enhance the quantitative results. The combination of quantitative and qualitative improved data interpretation, and provided a better understanding of how the free education program affected sanitation conditions at the school.

3.8 Reliability and Validity

In order to ensure that the results are credible, high quality. Reliability and validity must be guaranteed (Patton,2022). To ensure reliability, the research instruments were carefully created with clear, concise, and unambiguous questions that fit with the study's aims. The questions were pre-tested on a small group of respondents from outside the study population to find ambiguities and

improve clarity. Adjustments were made prior to final data collection to improve response uniformity.

A variety of measures were used to assure validity. Content validity was established by ensuring that the study instruments effectively addressed the essential areas of sanitation, hygiene, and enrolling problems associated with the free education policy. Expert guidance from Supervisors and reference to established WASH guidelines and previous studies informed the development of the instruments. The use of several data collection methods, such as questionnaires, interviews, and focus group discussions, increased construct validity. This combination of methods improved the credibility and integrity of the study results, ensuring that the conclusions drawn accurately reflect the sanitation issues faced by Manungu School following the adoption of the free education program.

3.9 Ethical Consideration

Protecting the rights of participants is vital, integrity must be upheld and the confidence in research is highly dependent on ethical standards. (Hasan et.,2021). In order to guarantee that each participant is treated with dignity and that their identity is protected the study has to adhere to ethical standards.

Informed Consent: All participants were fully informed about the nature, purpose and the procedure of the study prior to their participation. In order to ensure that participants understood their voluntary involvement, they were advised to withdraw at any point they felt uncomfortable without any repercussions.

Voluntary Participation: The participants were assured that their participation was on voluntary basis. Participation was not coerced or incentivized. Consent was given before participation and respondents were free to withdraw at any given point.

Confidentiality: To ensure confidentiality the study investigating the challenges of implementing the free education policy in Monze, Zambia, assured participants of their confidentiality by keeping them anonymous and aggregating all the information given.

Permission from debs: To successfully conduct the study permission was sought from the Monze Debs office. In addition, permission was sought from the school administration of Manungu Secondary school.

3.10 Limitations of the Study

The study was largely based on self-reported data from students, teachers, and support workers. self-reported information may be influenced by recall bias or social desirability bias, in which respondents supply answers that they believe are expected rather than their true experiences. To address this constraint, the replies of the study were compared with various respondent groups and cross-checked against enrollment records, sanitation facility counts, and publicly available school papers. This method increased the reliability and trustworthiness of the findings by guaranteeing consistency between reported experiences and observed evidence.

The other limitation of the study was that it concentrated on a single case study school, Manungu School. This limits the findings' applicability to all Zambian schools, as sanitation conditions and implementation issues may differ by district and area. However, this restriction was overcome by contextualizing the findings within current literature and analogous investigations undertaken in other parts of Zambia and Sub-Saharan Africa. By matching the conclusions with larger empirical evidence, the study increases its analytical value beyond the immediate issue.

3.11 Chapter Summary

The chapter presents the methodology of the study investigating the challenges of implementing the free education policy in Monze, Zambia. The study Outlines the research methods used, in the study that is qualitative and quantitative. The study also highlights the sampling techniques, sample size, data collection methods. The research instruments are also highlighted in this context questionnaires, interview guides, observation check lists and focus group discussions. The data analysis tools in the study are also discussed. The ethical considerations used in the study outlined and explained that is informed consent, voluntary participation as well as confidentiality. Finally, the chapter is closed by the limitations of the methodology.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.0 Overview

This section outlines the findings, presents the data and analyses the data of the study investigating the challenges of implementing the free education policy in Monze, Zambia: A Case study of Manungu Secondary school.

4.1 Response Rate

This study involved a total of 261 respondents, including pupils, teachers, support staff, and head teachers at Manungu School. Questionnaires were given to all selected respondents. The researcher made follow-ups and collected the questionnaires in person, which encouraged cooperation and full participation.

All 261 questionnaires were completed and returned, giving a 100% response rate. No questionnaires were incomplete or rejected. This ensured that the data collected were complete and truly represented the views of the sampled population, which strengthened the credibility of the study findings as tabulated below.

Table 11. Questionnaires Response Rate

Category	Questionnaires Distributed	Questionnaires Returned	Response Rate (%)
Pupils	187	187	100
Teachers	68	68	100
Support Staff	4	4	100
Head Teachers	2	2	100
Total	261	261	100

The full response rate improved both the validity and reliability of the study. Because every selected respondent participated, the data reflected the real experiences and opinions of the study population, reducing the risk of missing or biased responses. The inclusion of pupils, teachers, support staff, and

head teachers ensured balanced views from all key groups, helping the data to fully address the study objectives on toilet ratios, handwashing facilities, menstrual hygiene support, and classroom air quality.

In addition, using the same questionnaires under the same conditions for all respondents increased the reliability of the findings. The consistent responses reduced the chance of random errors and increased confidence that similar results would be obtained if the study were repeated under similar conditions.

4.2 Demographic Information

This section presents the demographic characteristics of the respondents who participated in the study. The demographic information includes respondents' sex, level of schooling, and grade or class. Presenting this information is important as it provides background details of the respondents and helps in understanding how different groups experience sanitation challenges under the free education policy at Manungu School.

4.2.1 Sex of Respondents

The study sought to establish the sex distribution of the respondents in order to ensure fair representation of both males and females, as sanitation needs and experiences may differ by sex. The findings show that both male and female respondents participated in the study across all categories.

Table 12. Sex Distribution of Respondents

Sex	Frequency	Percentage (%)
Male	112	42.9
Female	149	57.1
Total	261	100

The results indicate that female respondents constituted the majority (57.1%), while male respondents accounted for 42.9% of the sample. The higher number of female respondents reflects the gender composition of the school population, particularly among pupils and teachers. The inclusion of both sexes enhanced the representativeness of the study and ensured that gender-related sanitation challenges, such as menstrual hygiene management, were adequately captured.

4.2.2 Level of Schooling of Respondents

Respondents were drawn from different levels within the school system to ensure that views were obtained from all relevant groups affected by sanitation conditions under the free education policy.

Table 13. Level of Schooling of Respondents

Level of Schooling	Frequency	Percentage (%)
Primary Pupils	95	36.4
Secondary Pupils	92	35.2
Teachers (Primary & Secondary)	68	26.1
Support Staff	4	1.5
Head Teachers	2	0.8
Total	261	100

The findings show that pupils formed the largest proportion of respondents, accounting for 71.6% of the sample. This was appropriate because pupils are the main users of sanitation facilities in schools. Teachers, support staff, and head teachers were also included to provide administrative, instructional, and operational perspectives on sanitation challenges. This diverse composition allowed the study to obtain comprehensive information from all key stakeholders.

4.2.3 Grade/Class of Pupil Respondents

The study further analyzed the distribution of pupil respondents by grade or class to ensure that views were captured across different learning levels.

Table 14. Grade/Class Distribution of Pupil Respondents

Grade/Class	Frequency	Percentage (%)
Primary School Pupils	95	50.8
Secondary School Pupils	92	49.2
Total	187	100

The results show that primary and secondary pupils were almost equally represented, with primary pupils accounting for 50.8% and secondary pupils 49.2%. This balanced distribution ensured that sanitation challenges experienced at both lower and upper levels of schooling were adequately

represented. Differences in toilet usage, hygiene practices, and facility pressure between primary and secondary levels were therefore captured effectively.

Overall, the demographic characteristics of respondents demonstrate that the study achieved balanced representation in terms of sex, level of schooling, and grade. This diversity strengthened the credibility of the findings and provided a solid foundation for analyzing sanitation challenges related to the implementation of the free education policy at Manungu School.

4.3 Enrolment Levels under the Free Education Policy

The study determined the Manungu School enrollment levels so as to comprehend the extent of the sanitation scale demand created by the free education policy.

4.3.1 Student Enrolment by Level and Sex

Table 15. Student Enrolment by Level and Sex

Level	Boys	Girls	Total
Primary	937	883	1,820
Secondary	475	637	1,112
Total	1,412	1,520	2,932

Table_8 shows that the school has a total enrolment of 2,932 learners, consisting of 1,412 boys and 1,520 girls, with girls forming a slightly higher proportion of the total population. Enrolment is highest at the primary level, where 1,820 pupils are enrolled, compared to 1,112 at the secondary level. At primary level, boys (937) slightly outnumber girls (883), while at secondary level, girls (637) are significantly more than boys (475).

The data indicates that the free education policy has resulted in a large learner population, particularly at primary level, placing increased pressure on school facilities. The higher number of girls at secondary level also suggests improved retention of female learners, further increasing demand for adequate infrastructure and sanitation services to support the growing school population. Respondents consistently reported a considerable rise in enrollment, which put pressure on the sanitation infrastructure already in place.

"After free education, the numbers suddenly increased, but the restrooms remained the same" (Head teacher, interview).

4.4 Toilet Facilities for Pupils

4.4.1 Gender Segregation of Toilet

Boys and girls use separate restrooms at both the primary and secondary levels. In similar vein the female staff members and the male staff members also use separate toilets this is in accordance to data from surveys, interviews, and focus groups. Respondents agreed that gender segregation promotes dignity and privacy, particularly for girls depicted in the table below

Table 16. Response Rate of Questionnaires

Category	Level/Group	Sex	Number of Users	Number of Toilets
Pupils	Primary	Boys	937	7
	Primary	Girls	883	7
	Secondary	Boys	475	8
	Secondary	Girls	637	11
Staff	Teaching & Support	Male	28	2
	Teaching & Support	Female	84	2

"It's good that boys and girls are kept apart, but there aren't enough restrooms," said a female student in a focus group discussion. While gender separation was achieved, respondents emphasized that separation alone does not ensure adequacy.

4.4.2 Adequacy of Pupil Toilet ratio

The research study further carried an examination to find out whether the number of toilets available was adequate in ration to student enrollment.

Figure 1. Number of students and Toilets by Level and Sex

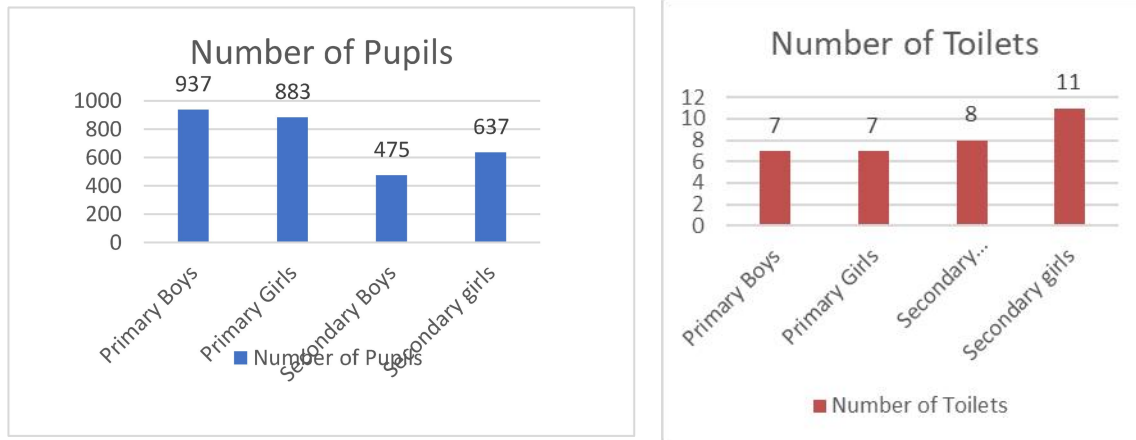


Figure 2 illustrates from the responses given that there are 937 primary boys against 7 toilets, 883 primary girls using 7 toilets, 475 secondary boys against 8 toilets and 637 secondary girls using 11 toilets.

Figure 2. Student Toilet Ratio by Level and Sex

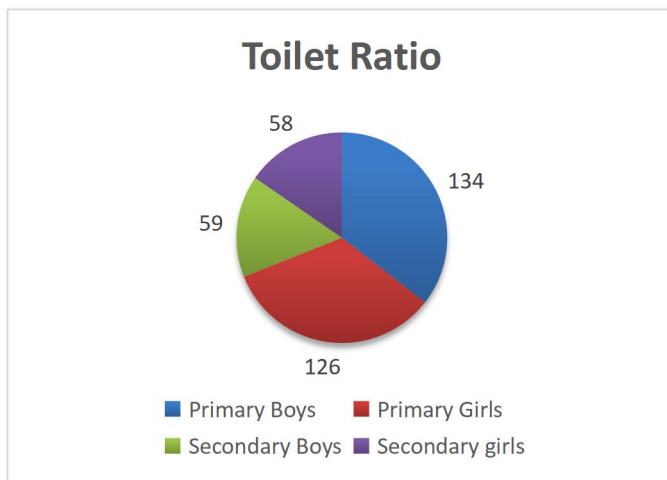


Figure 2 illustrates the student toilet ratio of each level; 1:59 for secondary boys, 1:134 for primary boys, 1:126 for primary girls and 1:58 for secondary girls.

These findings suggest that the free education policy increased enrolment without proportional expansion of sanitation facilities, negatively affecting sanitation levels. The results indicate that student-to-toilet ratios far exceed the WHO recommended standard of 25 pupils per toilet.

Respondents reported long queues, rushed use of toilets, and avoidance of toilet use during school hours.

“Sometimes we wait for more than 10 minutes during break.” (Male pupil, questionnaire).

4.5 Sanitation Facilities for Teachers and Support Staff

The study assessed sanitation facilities for teachers, head teachers and support staff, recognizing their role as daily users of school sanitation infrastructure.

The total number of staff at the school was 112, comprising 2 female head teachers, 2 female support staff, 2 male support staff, 80 female Teachers and 26 male teachers. All staff members shared 4 toilets, with two allocated for males and two for females. For each sex, one toilet was a pit latrine and the other a flushable toilet. The findings show that the toilets were inadequate for the female staff members though adequate for the male staff.

4.5.1 Staff Toilet Ratios

The distributions given above, were calculated as follows to give the staff to toilet ratios:

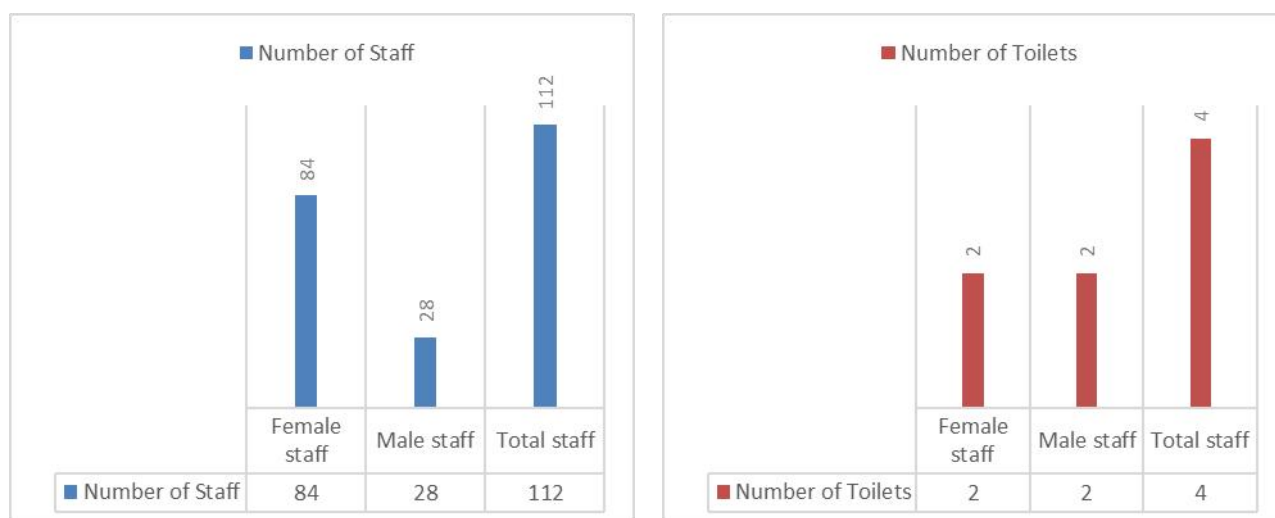


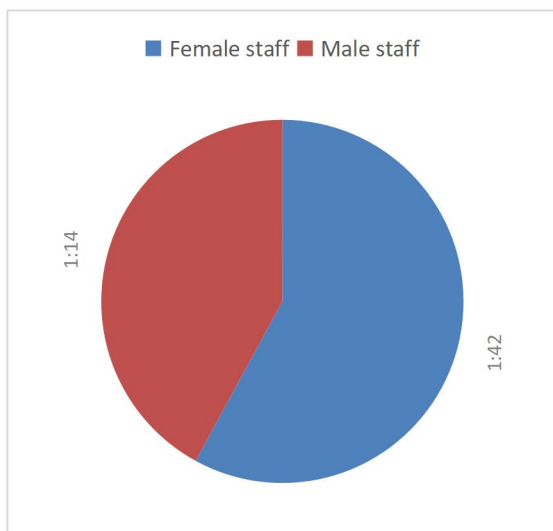
Figure 3. Number of Staffs and Toilets by Sex

The figure 3 above depicts that there are 84 female staff members using 2 toilets and there are 28 male staff using 2 toilets.

The findings imply that the sanitation facilities for staff at Manungu School are not equitably distributed, with female staff experiencing significant inadequacy due to their higher numbers compared to available toilets. The high female staff-to-toilet ratio results in congestion, long waiting times, and increased wear and tear of facilities, which negatively affects hygiene, comfort, and staff morale. This situation may also reduce staff productivity, as some female staff are forced to avoid using the toilets during working hours. Overall, the findings suggest that the free education policy increased staffing levels without a corresponding expansion of staff sanitation facilities, creating gender-based inequality and undermining staff wellbeing and effective school functioning.

4.5.2 Adequacy of Staff Sanitation Facilities

Figure 4. Staff Toilet Ratio by Sex



The findings show a clear disparity in toilet adequacy between male and female staff. While the male staff to toilet ratio of 1:14 falls within the recommended 1:20 standard, the female staff-to-toilet ratio of 1:42 is more than double the acceptable limit, indicating severe inadequacy. The results clearly demonstrate that male and female employees have different levels of toilet adequacy. The female staff-to-toilet ratio of 1:42 is more than twice the allowed level, indicating serious inadequacy, whereas the male staff-to-toilet ratio of 1:14 is within the suggested 1:20 threshold.

Congestion, lengthy wait times, and discomfort were noted by female teachers and head teachers, especially during break times.

“Because many of us share just two restrooms, it is really challenging for us as women, particularly during breaks. In order to avoid using the school restroom during breaks, some female teachers have actually turned to going home.” (Interview with a female teacher).

Support staff also reported to say many people use the toilets which has in turn caused heavy usage of the female toilets’ frequent cleanliness challenges.

“The women’s toilets get dirty very fast because they are used by too many people.” (Female support staff).

The findings imply that staff sanitation facilities at Manungu School are inadequate, especially for female staff, whose toilet ratio of 1:42 falls far below the recommended standard. This results in congestion, long waiting times, and discomfort, causing some female staff to avoid using the toilets or leave the school during breaks, which reduces time for teaching and supervision. The heavy use of limited female toilets also leads to frequent cleanliness problems, increasing health risks and lowering staff morale. Overall, the findings indicate that the free education policy increased staff numbers without a corresponding expansion of sanitation facilities, creating gender inequality and negatively affecting staff wellbeing, productivity, and effective policy implementation.

4.5.3 Implications for Free Education Policy Implementation

Respondents connected the increasing enrollment brought forth by the free education policy to the strain on staff sanitation facilities. Despite the policy's primary focus on students, it indirectly raises staff workloads and sanitary requirements without equivalent facility growth. The results indicate that although staff restrooms are sex-segregated, they are not equally suitable, especially for female employees. Particularly for female educators who make up the majority of the school's employment, this disparity undermines staff dignity and may have a detrimental impact on morale and productivity.

Table 17. Staff Toilet Ratios

Category	Total Staff	Total Toilets	Toilet Ratio
Teaching & Support Staff	112	4	1:28

“Most times we have to hold ourselves until we’re home.” (Female teacher, interview).

Support staff further reported that frequent use resulted in a decline in hygiene and maintenance challenges.

4.6 Handwashing Facilities and Hygiene Practices

The study found that the school had 15 handwashing facilities in various locations. 2 in female primary students' toilets, 2 in primary male students' toilets, 2 in female secondary students' toilets, 2 in male secondary school students' toilets, 1 in the male staff members' toilets, 1 in female staff members' toilets and 5 outsides, 1 near school offices, 1 near the school garden, and 3 in one central location.

Although water was available, respondents indicated that soap was rarely provided, limiting effective hygiene practices.

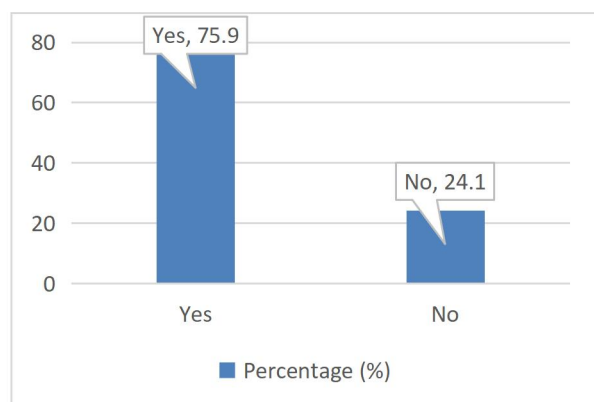
“Most of the time we wash hands with water only, even if teacher taught us that use soap to avoid germs.” (Primary pupil).

Teachers and support staff confirmed that soap shortages were linked to increased enrolment and insufficient funding for consumable hygiene supplies. Also, they mentioned that they then decide to use the finance available for the core business of the school.

4.6.1 Availability of Handwashing Facilities Near Toilets

Respondents were asked whether handwashing facilities were available near toilets.

Figure 5. Availability of Handwashing Facilities Near Toilets



The results show that **75.9%** of respondents indicated that handwashing facilities were available near toilets, while **24.1%** reported that no handwashing facilities were located close to some toilets.

Although the majority reported the presence of handwashing facilities, the absence of facilities near some toilets poses a hygiene risk. Learners and staff who cannot access handwashing points immediately after toilet use are less likely to practice proper hygiene, increasing the risk of disease transmission in a high-enrolment school environment.

4.6.3 Availability of Water for Handwashing

Respondents were asked whether water was consistently available for handwashing.

Table 18. Availability of Water

Response	Frequency	Percentage (%)
Yes	214	82.0
No	47	18.0
Total	261	100

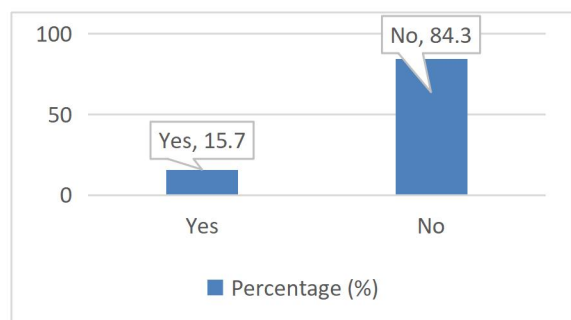
The results show that **82.0%** of respondents confirmed water availability, while **18.0%** reported intermittent or no access at certain times.

This implies that while water availability is relatively high, intermittent shortages during peak periods undermine hygiene compliance. In a school affected by enrolment growth, inconsistent water access weakens sanitation resilience and increases vulnerability to hygiene-related illnesses.

4.6.4 Availability of Soap for Hand-washing

Respondents were asked whether soap was provided at hand-washing points.

Figure 6. Availability of Soap



The findings show that **84.3%** of respondents reported that soap was not available, while only **15.7%** indicated occasional availability.

The implication of findings is the lack of soap severely compromises effective hygiene practices. Even with water and facilities available, the absence of soap means handwashing does not meet minimum public health standards, increasing the risk of communicable disease spread in overcrowded school settings.

4.6 Girls’ Hygiene Support and Sanitary Bins

Findings revealed that no sanitary bins were provided in female toilets for either pupils or female staff. As a result, girls disposed of sanitary pads in pit latrines, they added that this act makes the latrines to get full faster thereby reducing the number of Toilets.

“Sometimes we decide to just stay home during menstrual days because the Latrines that are not yet full are located near the ones that are not and the smell kills us.” (Female teacher).

Due to lack of help for menstrual hygiene, latrines filled up quickly. Because the free education policy failed to prepare for this, pupils ended up disposing of their waste in latrines.

4.6.1 Availability of Sanitary Bins in Female Toilets

Table 19. Availability of Sanitary Bins

Response	Frequency	Percentage (%)
Yes	0	0.0
No	261	100
Total	261	100

All respondents (100%) reported that no sanitary bins were provided in female toilets.

The complete absence of sanitary bins indicates a serious gap in menstrual hygiene management. This undermines girls’ dignity, privacy, and school attendance, contradicting the objectives of the free education policy.

4.6.2 Disposal Methods for Sanitary Materials

Female respondents were asked how sanitary materials were disposed of.

Table 20. Disposal Methods for Sanitary Materials

Disposal Method	Frequency	Percentage (%)
Pit latrines	137	91.9
Taken home	12	8.1
Total (Female Respondents)	149	100

The majority (**91.9%**) disposed of sanitary materials in pit latrines.

Disposal of sanitary waste in latrines accelerates pit filling, increases odors, and shortens toilet lifespan, worsening sanitation conditions and increasing maintenance costs

4.7 Water Supply and Treatment

The school at the primary and secondary level was found to have access to clean water, which encouraged handwashing and toilet use. However, concerns regarding safety were raised by respondents' reports that the water was not chlorinated.

"We have water, but it's untreated."(Support personnel).

These results point to a partial adherence to WASH regulations.

4.7.1 Availability of Water Supply

Respondents were asked whether the school had a reliable water supply.

Table 21. Availability of Water Supply

Response	Frequency	Percentage (%)
Yes	232	88.9
No	29	11.1
Total	261	100

Most respondents (**88.9%**) confirmed the availability of water at the school.

The presence of water supports sanitation activities; however, increased enrolment means that demand may exceed supply if not continuously upgraded

4.7.2 Water Treatment Practices

Respondents were asked whether water was treated before use.

Table 22. Water Treatment

Response	Frequency	Percentage (%)
Treated	0	0.0
Not treated	261	100
Total	261	100

All respondents indicated that the water was **not treated**.

Untreated water in a high-density school environment exposes learners and staff to waterborne diseases, undermining health outcomes and learning continuity.

4.8 Classroom Conditions and Air Quality

Despite these challenges, the general school environment was reported to be clean, due largely to the efforts of support staff. Overcrowding in classrooms was a common complaint among respondents, especially in secondary education. Particularly in the afternoons, high pupil density decreased airflow, which led to inadequate ventilation and dusty conditions.

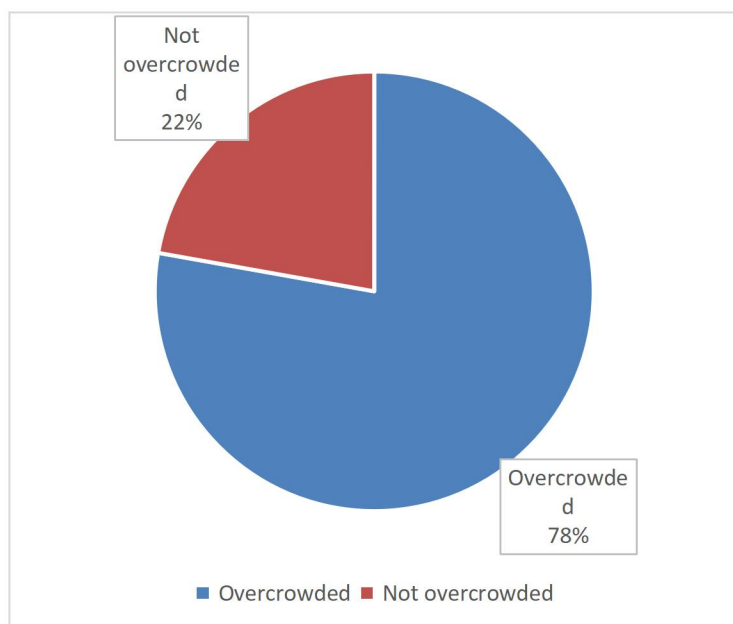
"The rooms are hot and stuffy by afternoon." (Secondary student).

Due in great part, to the efforts of support workers, the general school environment was reported to be clean despite these difficulties.

4.8.1 Classroom Congestion Levels

Respondents were asked whether classrooms were overcrowded.

Figure 7. Classroom Congestion



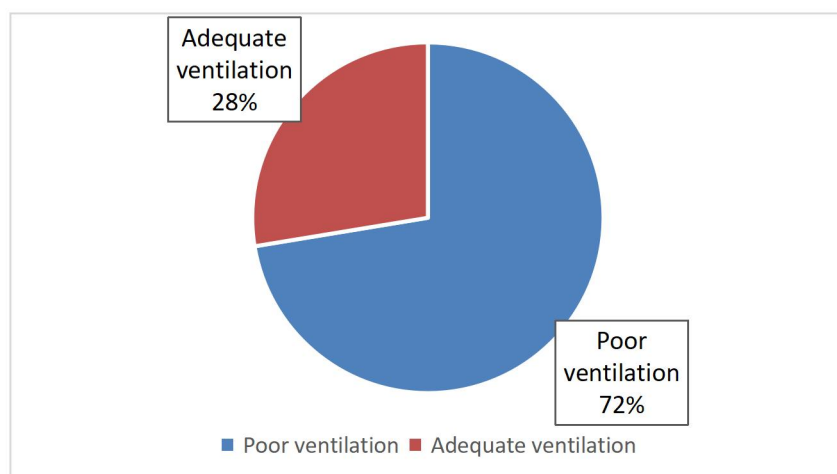
A majority (77.8%) reported overcrowded classrooms.

Therefore, overcrowding increases pressure on sanitation facilities and negatively affects learner comfort, discipline, and health.

4.8.2 Ventilation and Air Quality

Respondents were asked about classroom ventilation.

Figure 8. Classroom Ventilation



72.4% of respondents reported poor ventilation.

Which implies that poor air quality increases the risk of respiratory illnesses and reduces concentration, further illustrating how enrolment growth without infrastructure expansion affects learning environments.

4.9 DISCUSSION OF FINDINGS

4.9.1 Enrolment Growth and Sanitation Demand under the Free Education Policy

The statistics clearly show that implementing the free education policy at Manungu School resulted in a significant rise in student enrollment. While this result is a great step toward Sustainable Development Goal 4 (Quality Education), it has also increased pressure on sanitation facilities. The enrolment figure of 2,932 learners substantially exceeded the design capacity of the existing sanitation facilities, which remained unchanged following policy implementation.

From a WASH perspective, sanitation infrastructure must be population-responsive, meaning that facilities should be expanded in proportion to increases in users (WHO & UNICEF, 2018). The failure to adjust sanitation infrastructure alongside enrolment growth resulted in overcrowding, excessive facility usage, and accelerated deterioration of toilets and hygiene facilities. This finding highlights a critical policy implementation gap, where education access was prioritized without integrated WASH planning.

UNICEF (2021) emphasizes that education policies that expand access without parallel investment in WASH facilities risk undermining learner health, dignity, and attendance. Consequently, while the

free education policy advanced educational inclusion, it inadvertently compromised sanitation standards, illustrating the interdependence between education policy and WASH systems.

4.9.2 Pupil-to-Toilet Ratios and Sanitation Adequacy

The pupil-to-toilet ratios observed at Manungu School far exceeded internationally accepted standards. Ratios of 1:134 for primary boys, 1:126 for primary girls, and approximately 1:58 for secondary pupils are significantly higher than the WHO-recommended standard of one toilet per 25 learners in school settings (WHO, 2019).

Such extreme ratios indicate severe sanitation inadequacy and reflect the inability of infrastructure to absorb the increased enrolment brought about by the free education policy. According to WHO (2019), high pupil-to-toilet ratios lead to long waiting times, unsanitary conditions, and reduced toilet use, all of which increase the risk of communicable diseases.

The findings from pupils reporting long queues and avoidance of toilets are consistent with UNICEF (2021), which notes that overcrowded sanitation facilities discourage regular use, particularly among younger learners. This avoidance can result in health complications such as urinary tract infections and gastrointestinal illnesses, ultimately affecting learner concentration and academic performance.

In this context, the free education policy indirectly contributed to sanitation stress by increasing user demand without expanding toilet infrastructure, thereby compromising SDG 6 (Clean Water and Sanitation) alongside SDG 4.

4.9.3 Gender Sensitivity and Inequality in Staff Sanitation Facilities

The analysis revealed a pronounced gender disparity in staff toilet access. Female staff, who constituted the majority of employees, shared two toilets at a ratio of 1:42, while male staff shared two toilets at a ratio of 1:14. Although staff toilets were sex-segregated, they were not equitably distributed.

UNICEF (2019) emphasizes that gender-responsive sanitation goes beyond segregation and requires equitable access based on user numbers. The female staff-to-toilet ratio at Manungu School exceeded the recommended standard of 1:20 for staff, indicating serious inadequacy (WHO, 2019).

The qualitative accounts of female teachers avoiding toilet use during work hours reflect how sanitation inadequacy undermines dignity, comfort, and productivity. WHO (2020) argues that inadequate workplace sanitation disproportionately affects women due to biological needs and menstrual hygiene requirements. This inequality directly contradicts SDG 5 (Gender Equality) and undermines workplace wellbeing.

The findings suggest that the free education policy increased staffing demands without corresponding sanitation expansion, thereby intensifying gender-based sanitation inequality among school staff.

4.9.4 Handwashing Facilities, Soap Availability, and Hygiene Compliance

Although the school had 15 handwashing points and consistent access to water, the lack of soap significantly undermined effective hygiene practices. WHO (2020) stresses that handwashing with soap is essential for preventing the transmission of infectious diseases and that water alone is insufficient.

The increased enrolment following the free education policy raised demand for consumable hygiene resources such as soap, yet funding allocations did not adequately adjust to meet this increased demand. UNICEF (2021) notes that schools experiencing enrolment surges often deprioritize hygiene consumables in favor of instructional materials, leading to compromised WASH compliance.

This gap in hygiene provision increases the risk of disease outbreaks, absenteeism, and reduced learning time, particularly in high-density school environments. The findings therefore demonstrate partial compliance with WASH standards and highlight a disconnect between infrastructure availability and functional hygiene practice.

4.9.5 Menstrual Hygiene Management and Girls' Educational Participation

The absence of sanitary bins in female toilets represents a critical failure in menstrual hygiene management (MHM). UNICEF (2019) identifies MHM as a core component of school WASH, essential for ensuring girls' dignity, health, and continued participation in education.

The disposal of sanitary pads in pit latrines, as reported in this study, not only accelerated latrine filling but also worsened sanitation conditions and odor. WHO (2019) warns that improper waste disposal compromises sanitation facility lifespan and increases maintenance costs.

Moreover, reports of girls staying home during menstruation indicate that inadequate MHM directly undermines the objectives of the free education policy by contributing to absenteeism. This outcome contradicts both SDG 4 (Quality Education) and SDG 5 (Gender Equality), demonstrating that access to education alone is insufficient without supportive sanitation infrastructure.

4.9.6 Water Availability, Treatment, and Health Implications

While the school's access to water supported toilet use and basic hygiene, the absence of water treatment posed significant health risks. WHO (2017) emphasizes that untreated water in institutional settings can transmit waterborne diseases, particularly in environments with high user density.

UNICEF (2021) stresses that safe water provision is a fundamental pillar of school WASH. The findings suggest that although the free education policy increased water demand, water safety measures were not strengthened accordingly. This partial compliance exposes learners and staff to preventable health risks and undermines SDG 6, which emphasizes both access and safety of water.

4.9.7 Classroom Overcrowding and Air Quality

The study revealed that increased enrolment resulted in overcrowded classrooms, particularly at the secondary level. High pupil density reduced ventilation and air circulation, leading to stuffy and dusty classroom environments.

WHO (2021) links poor indoor air quality to increased respiratory infections, reduced concentration, and diminished cognitive performance. In overcrowded classrooms, these effects are amplified, especially in warm climates.

The findings indicate that the free education policy indirectly affected classroom air quality by increasing enrolment without expanding classroom space or improving ventilation systems. This demonstrates that sanitation challenges under the policy extend beyond toilets and water to include broader environmental health conditions that affect learning outcomes.

4.9.8 Synthesis of Findings

Overall, the analysis demonstrates that the free education policy achieved its goal of increasing access to education but did so without sufficient integration of WASH planning. The resulting sanitation inadequacies affected pupils and staff differently, with girls and female staff experiencing disproportionate impacts.

The findings underscore the necessity of integrating education policies with WASH standards to ensure that gains in access do not come at the expense of health, dignity, and learning quality.

4.9.9 Chapter Summary

This chapter presented the findings of the study and the chapter focused on the presentation of the data, analysis of the data thereof and the discussion of the findings. The chapter began by presenting enrollment data to establish the scale of sanitation demand created by the free education policy. The findings then showed a significant increase.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Overview

Chapter 5 concludes this study by summarizing the findings of the study and offering recommendations that are based on data analysis.

5.1 Summary of Findings

This study examined the effects of the free education policy on sanitation levels at Manungu School in Monze District, Zambia: A Case Study of Manungu Secondary School. The summary of findings is organized in line with the study's general and specific objectives.

5.1.1 Staff Toilet Ratio and Student Toilet Ratio

The study established that 112 staff members shared only four toilets, resulting in an overall staff-to-toilet ratio of 1:28. A significant gender disparity was identified: female staff shared two toilets at a ratio of 1:42, while male staff shared two toilets at a ratio of 1:14. This imbalance caused congestion, discomfort, and reduced dignity for female staff, highlighting gender inequality in sanitation provision.

Similarly, the student to toilet ratios at both primary and secondary levels far exceeded the WHO recommended standard of one toilet per 25 learners. Primary school ratios were particularly critical, reaching 1:134 for boys and 1:126 for girls, while secondary ratios stood at 1:59 for secondary boys and 1:58 for secondary girls. These high ratios led to long queues, rushed toilet use, avoidance of toilets during school hours, and deteriorating sanitation conditions.

5.1.2 Handwashing Facilities Adequacy

Although the school had 15 handwashing points and consistent access to water, the absence of soap severely limited effective hand hygiene practices. Increased enrolment further strained hygiene resources, increasing the risk of disease transmission and undermining compliance with WASH standards.

5.1.3 Availability of Sanitary bins

The study found that no sanitary bins were available in female toilets for either students or staff. As a result, girls disposed of sanitary pads in pit latrines, accelerating latrine filling and worsening sanitation conditions. This lack of menstrual hygiene support contributed to absenteeism among female learners and discomfort among female staff, negatively affecting girls' participation in education.

5.1.4 Classroom Overcrowding and Air Quality

The findings showed that increased enrolment resulted in overcrowded classrooms, particularly at the secondary level. Overcrowding reduced ventilation and air circulation, leading to stuffy and dusty classroom environments, especially in the afternoons. Poor indoor air quality was reported to affect learner comfort, concentration, and overall learning conditions

5.2 Conclusions

This study investigated the effects of the free education policy on sanitation levels at Manungu School in Monze District, Zambia. The findings demonstrate that while the policy has significantly improved access to education, it has unintentionally placed severe pressure on sanitation infrastructure, hygiene services, and classroom environments.

The study established that enrolment increased sharply following the introduction of the free education policy, resulting in student and staff populations that far exceed the capacity of existing sanitation facilities. Pupil-to-toilet ratios at both primary and secondary levels were substantially above the WHO recommended standard of 1:25, while the female staff-to-toilet ratio exceeded acceptable thresholds, revealing serious gender-based inequities in sanitation access.

Although toilets were gender-segregated, the number of facilities was inadequate, particularly for girls and female staff. The absence of sanitary bins in female toilets compromised menstrual hygiene management, leading to improper waste disposal and increased absenteeism among female learners and discomfort among female staff. These conditions undermine the objectives of SDG 4 (Quality Education) and SDG 5 (Gender Equality).

Furthermore, while the school had access to water and handwashing facilities, the lack of soap and untreated water limited effective hygiene practices, exposing pupils and staff to preventable health risks. Classroom overcrowding resulting from increased enrolment negatively affected ventilation and air quality, particularly in secondary classrooms, potentially impacting learners' health and academic performance.

In conclusion, the study finds that the free education policy, although successful in expanding access to education, was implemented without sufficient integration of WASH planning. Addressing sanitation challenges is therefore essential to ensure that gains in educational access are sustainable, equitable, and supportive of learner and staff wellbeing.

5.3 Recommendations

The recommendations are presented according to key stakeholders: school administration and management, teachers and support staff, and pupils, in order to promote shared responsibility for improved sanitation outcomes.

5.3.1 Recommendations for School Administration and Management

i. **Expansion of Toilet Infrastructure**

School management should prioritize the construction of additional toilets to meet WHO-recommended pupil-to-toilet and staff-to-toilet ratios. Particular attention should be given to increasing the number of female toilets to reflect the higher number of female pupils and staff.

ii. **Gender-Responsive Sanitation Planning**

Toilet provision should be planned based on user numbers rather than simple gender segregation. Additional female staff toilets should be constructed to reduce the current imbalance and promote dignity, comfort, and productivity.

iii. **Provision of Menstrual Hygiene Facilities**

Sanitary bins should be installed in all female toilets for both pupils and staff. The school should also establish a regular waste collection and disposal system to prevent latrine blockages and improve hygiene conditions.

iv. **Improvement of Handwashing Facilities**

The administration should ensure continuous availability of soap at all handwashing points.

Budget allocations should include recurring funds for hygiene consumables as part of routine school operations.

v. **Water Treatment Measures**

The school should introduce simple and cost-effective water treatment methods, such as chlorination, to ensure that all water used for drinking and hygiene purposes meets safety standards recommended by WHO.

vi. **Classroom Expansion and Ventilation**

To address overcrowding and poor air quality, the school should seek government or donor support to construct additional classrooms and improve ventilation through window expansion or installation of vents.

vii. **Integration of WASH into School Development Plans**

WASH considerations should be mainstreamed into school development and budgeting plans to ensure that future enrolment increases are matched with appropriate sanitation infrastructure expansion.

5.3.2 Recommendations for Teachers and Support Staff

i. **Sanitation Monitoring and Maintenance**

Teachers and support staff should collaboratively monitor the condition of toilets and handwashing facilities and promptly report maintenance needs to school management.

ii. **Hygiene Education and Behavior Change**

Teachers should integrate hygiene education into daily school routines, emphasizing proper toilet use, handwashing with soap, and safe waste disposal, in line with UNICEF WASH in Schools guidelines.

iii. **Support for Menstrual Hygiene Management**

Female teachers should provide guidance and support to girls on menstrual hygiene, while school staff should ensure that sanitary bins are used appropriately once provided.

iv. **Classroom Management to Improve Air Quality**

Teachers should adopt strategies such as staggered lesson schedules, open windows, and outdoor learning where possible to improve ventilation and reduce indoor air congestion.

5.3.3 Recommendations for Pupils

i. **Proper Use of Sanitation Facilities**

Pupils should be encouraged to use toilets correctly, avoid misuse of facilities, and dispose of waste responsibly to prolong facility lifespan.

ii. **Promotion of Hand Hygiene**

Learners should be sensitized on the importance of handwashing with soap, particularly after toilet use and before meals, to reduce disease transmission.

iii. **Peer Hygiene Advocacy**

Pupils should be encouraged to act as hygiene ambassadors, promoting cleanliness and reporting sanitation challenges to teachers or school authorities.

iv. **Respect for Menstrual Hygiene Facilities**

Both male and female pupils should be educated on menstrual hygiene to reduce stigma and ensure respectful use of sanitation facilities.

RECOMMENDATIONS FOR FUTURE RESEARCH

Based on the findings of this study on the challenges of implementing the free education policy on sanitation levels at Manungu School, several areas are recommended for future research.

Future studies should consider using a larger sample size and multiple schools across different districts and provinces. Expanding the scope beyond a single school would improve the generalizability of findings and allow for meaningful comparisons between rural and urban schools, as well as between primary and secondary schools. This would provide a broader understanding of how the free education policy affects sanitation infrastructure across Zambia.

There is also a need for longitudinal research that follows schools over an extended period. Such studies would capture changes in enrolment, sanitation facility conditions, and maintenance needs over time, including seasonal variations such as rainy periods when sanitation challenges are often more severe. Long-term studies would help assess whether sanitation conditions improve or deteriorate as the free education policy continues to be implemented.

Future research should place greater emphasis on girls' sanitation and menstrual hygiene management. While this study identified the absence of sanitary bins and its impact on attendance and dignity, more focused research is needed to examine how inadequate menstrual hygiene support

affects girls' academic performance, attendance, and psychosocial wellbeing under the free education policy.

Further studies are also encouraged to examine the relationship between sanitation conditions and learning outcomes. Investigating how poor sanitation, overcrowded toilets, and limited handwashing facilities affect pupil health, attendance, and concentration would strengthen the evidence linking WASH infrastructure to educational quality.

Lastly, future research should explore policy implementation and financing mechanisms related to school WASH. Studies that assess budget allocation, funding flows, and accountability structures would help identify gaps between policy intentions and actual implementation on the ground. Such research would provide practical insights for improving the sustainability of sanitation facilities alongside the expansion of free education.

These future research directions would build on the findings of the current study and contribute to stronger evidence-based planning for integrating education policies with WASH standards in schools.

REFERENCES

ActionAid Zambia (2023) *Parliamentary submission on free education in Zambia*. ActionAid Zambia, 31 January.

Bwembya, I. (2024) *The provision of free education and its sustainability*. University of Zambia Repository.

Chunga, F., Mwaba, M. and Kaumba, M. (2022) 'Impact of increased school enrollment on sanitation infrastructure in Zambian public schools', *Journal of Environmental Health*, 14(2), pp. 134–145.

Gifford, R. (2014) *Environmental psychology: Principles and practice*. 5th edn. Colville, WA: Optimal Books.

Human Rights Watch (HRW) (2024) *Free education and school sanitation in Ghana*. Human Rights Watch Report.

Kenny, J. (2022) *Using systems perspectives to develop underlying educational reforms*. ERIC. Available at: <https://files.eric.ed.gov> (Accessed: 18 November 2025).

Local Education Office (2024) *Sanitation challenges in Monze schools' post-free education policy*. Monze District Education Office Reports.

Local Study in Monze District (2024) *Challenges of free education policy in Monze secondary schools*. Academia.edu, 12 November.

Medafrica Times (2024) 'Zambia's free education policy strains school resources', *Medafrica Times*, 31 December.

Ministry of Education Zambia (2024) *Annual education statistical bulletin*. Lusaka: Government Printer.

Monze Council (2024) *National water policy and sanitation in schools*. Monze: Council Publications.

Monze WASH Programme (2024) *Impact of free education policy on school WASH facilities in Monze*. Provincial Health Office.

Mwansa, P. and Kabwe, L. (2023) 'Hygiene challenges and implications of inadequate handwashing facilities in schools in Zambia', *African Journal of Public Health*, 29(1), pp. 56–67.

Mwelwa, K. (2023) 'Effects of free education policy on the provision of primary and secondary school facilities in Zambia', *East African Journal of Education and Social Sciences*, 5(2), pp. 45–59.

OECD (2017) *Education policy implementation: A literature review and proposed framework*. OECD Education Working Papers No. 151.

OAPUB (2020) *Implementation of the free education policy in primary schools in Kafue District*. Open Academic Publishing, 20 August.

Pfeffer, J. and Salancik, G.R. (1978) *The external control of organizations: A resource dependence perspective*. New York: Harper and Row.

Phiri, S. and Tembo, D. (2021) 'Menstrual hygiene management and access to sanitary products in rural Zambian schools', *Gender and Education Review*, 19(3), pp. 278–290.

Sage Journals (2025) *Impact of free education policies on school sanitation in Sub-Saharan Africa*. Sage Publications.

Sata, S.K. (2024) 'Free education and sanitation outcomes', *Web of Semantic: Universal Journal on Innovative Education*, 3(5), pp. 28–41.

Senge, P.M. (1990) *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.

SPLASH Project (2025) *Final technical report on WASH facilities in Zambia schools*. FHI 360, 15 April.

UNICEF (2019) *Guidance on menstrual health and hygiene*. New York: UNICEF.

UNICEF (2021) *Water, sanitation and hygiene in schools: A companion to the child-friendly schools manual*. New York: UNICEF.

UNICEF Zambia (2024) *School sanitation and hygiene reports*. Lusaka: UNICEF Zambia.

United Nations (2015) *Transforming our world: The 2030 Agenda for Sustainable Development*. New York: United Nations.

World Bank (2024) *Education and health infrastructure investment in Zambia*. Washington, DC: World Bank.

World Health Organization (WHO) (2017) *Guidelines for drinking-water quality*. 4th edn. Geneva: WHO.

World Health Organization (WHO) (2019) *Sanitation and health guidelines*. Geneva: WHO.

World Health Organization (WHO) (2020) *WHO guidelines on hand hygiene in health care*. Geneva: WHO.

World Health Organization (WHO) (2021) *Roadmap to improve and ensure good indoor ventilation*. Geneva: WHO.

World Health Organization (WHO) (2023) *Water, sanitation and hygiene (WASH) in schools: Global progress report*. Geneva: WHO Press.

World Health Organization (WHO) (2023) *Menstrual hygiene management in schools: Policy and practice*. Geneva: WHO.

WHO and UNICEF (2018) *Drinking water, sanitation and hygiene in schools: Global baseline report*. Geneva/New York: WHO & UNICEF.

WHO and UNICEF (2024) *Progress on drinking water, sanitation and hygiene in schools*. Joint Monitoring Programme Report.

World Vision International (2004) *Water, sanitation and hygiene in Zambia schools*. World Vision, 31 January.

Zambia Ministry of Education (2024) *Education sector environmental and social management framework*. Lusaka: Ministry of Education.

Zambia Ministry of Education (2025) *Water, sanitation and hygiene in schools (WinS) guidelines*.
Lusaka: Ministry of Education.

ZANEC (2025) *Comprehensive analysis of budget tracking for Zambia's free education policy (2022–2023)*. Zanec.org.zm.

APPENDICES

APPENDIX A: QUESTIONNAIRE FOR PRIMARY AND SECONDARY SCHOOL PUPILS

Title:

Questionnaire for Pupils on the Effects of the Free Education Policy on Sanitation Levels at Manungu School, Monze District

Instructions to Respondents:

This questionnaire is for academic purposes only. Your responses will be kept confidential. Do not write your name. Tick (✓) the most appropriate answer or write where necessary.

Section A: Demographic Information

1. Sex:
 Male Female
2. Level of Schooling:
 Primary Secondary
3. Grade/Class: _____

Section B: Enrollment and Toilet Facilities

4. Are boys and girls using separate toilets?
 Yes No
5. How many toilets are allocated for pupils of your sex?
 1–2 3–4 5–6 More than 6 Don't know
6. How many pupils usually use one toilet?
 Less than 25
 25–40
 41–60
 More than 60

7. Do you feel the toilets are enough for the number of pupils?

Yes No

Section C: Hand Washing Facilities

8. Are there hand washing facilities near the toilets?

Yes No

9. What type of hand washing facilities are available?

Taps Water drums/buckets Both

10. Is water always available for hand washing?

Always Sometimes Never

11. Is soap usually available?

Always Sometimes Never

Section D: Girls' Hygiene Support (For Female Pupils Only)

12. Are sanitary bins available in girls' toilets?

Yes No

13. If yes, are they adequate and emptied regularly?

Yes No

14. Have sanitation challenges ever made you miss school?

Yes No

Section E: Air Quality and Cleanliness

15. Are classrooms overcrowded?

Yes No

16. How would you rate air quality in classrooms?

Very good Good Poor Very poor

17. Does the school environment appear clean?

Yes No

APPENDIX B: QUESTIONNAIRE FOR PRIMARY AND SECONDARY SCHOOL TEACHERS

Title:

Questionnaire for Teachers on the Effects of the Free Education Policy on Sanitation Levels

Section A: Background Information

1. Sex: Male Female
2. Level taught: Primary Secondary
3. Years of teaching experience: _____

Section B: Staff and Student Numbers

4. Has free education increased student enrollment at this school?
 Yes No
5. Approximate number of students currently enrolled: _____

Section C: Sanitation Facilities

6. Are staff toilets separate from pupils' toilets?
 Yes No
7. How many toilets are available for:
 - Male teachers: _____
 - Female teachers: _____

8. Do staff share toilets?

Yes No

9. Are hand washing facilities adequate for staff and pupils?

Yes No

Section D: Girls' Hygiene and Health

10. Are sanitary bins provided in female toilets?

Yes No

11. Are the bins sufficient for both female pupils and staff?

Yes No

12. Have you observed absenteeism among girls due to sanitation challenges?

Yes No

Section E: Air Quality and Learning Environment

13. Are classrooms overcrowded?

Yes No

14. Does overcrowding affect air quality and learning?

Yes No

15. In your opinion, has free education strained sanitation facilities?

Yes No

APPENDIX C: INTERVIEW GUIDE FOR HEAD TEACHERS

Title:

Interview Guide for Head Teachers on Free Education Policy and Sanitation

1. How has the free education policy affected enrollment at your school?

2. What sanitation facilities are currently available for:
 - Boys
 - Girls
 - Male staff
 - Female staff
3. Are these facilities adequate for the current population? Why or why not?
4. How has increased enrollment affected:
 - Toilet–user ratios
 - Hand washing facilities
 - Air quality in classrooms
5. What challenges exist regarding sanitary bins for female pupils and staff?
6. What measures has the school taken to improve sanitation?
7. What support is required from government or stakeholders?

APPENDIX D: INTERVIEW GUIDE FOR SUPPORT STAFF

Title:

Interview Guide for Support Staff on Sanitation Management

1. What is your main sanitation-related duties?
2. How many toilets do you clean daily?
3. Are toilets sufficient for the number of users?
4. Is hand washing facilities functional at all times?
5. How are sanitary bins managed and emptied?
6. Have sanitation challenges increased since free education was introduced?
7. What challenges do you face in maintaining hygiene?

APPENDIX E: OBSERVATION CHECKLIST

Title:

Sanitation Observation Checklist for Manungu School

Table 23. Sanitation Observation Checklist for Manungu School

Item	Observed	Not Observed
Separate toilets for boys and girls	<input type="checkbox"/>	<input type="checkbox"/>
Separate staff toilets	<input type="checkbox"/>	<input type="checkbox"/>
Adequate number of pupil toilets	<input type="checkbox"/>	<input type="checkbox"/>
Functional hand washing taps	<input type="checkbox"/>	<input type="checkbox"/>
Soap available	<input type="checkbox"/>	<input type="checkbox"/>
Sanitary bins in female toilets	<input type="checkbox"/>	<input type="checkbox"/>
Bins emptied regularly	<input type="checkbox"/>	<input type="checkbox"/>
Classrooms overcrowded	<input type="checkbox"/>	<input type="checkbox"/>
Good classroom ventilation	<input type="checkbox"/>	<input type="checkbox"/>
Clean school environment	<input type="checkbox"/>	<input type="checkbox"/>