

DECLARATION

I, **CAESAR HAMBULO**, declare that the dissertation hereby submitted is my own work and has not previously been submitted for any Degree, Diploma or other qualification at the University of Zambia or any other University.

APPROVAL

This dissertation by **CAESAR HAMBULO** is approved as being partial fulfilment of the requirements for the award of the Master of Education (Environmental Education) degree of the University of Zambia.

Signed: **Date:**

Signed: **Date:**

Signed: **Date:**

DEDICATION

I dedicate this work, in appreciation, to my lovely wife Judith Hambulo and my children; Joy Richard, Faith and Emmanuel as well as my sister Susan Munyeme for their support and encouragement. You have all made me what I am today.

I love you all.

ACKNOWLEDGEMENTS

This study programme may not have been possible if a number of people in their various capacities did not contribute wholeheartedly in different ways.

My greatest appreciation goes to Dr. Liberty Mweemba of the University of Zambia, School of Education for his tireless corrections, help, and guidance. As my Supervisor I would like to appreciate all the tireless work he put in to ensure that this study becomes a success. Thank you so very much for all the criticisms. They have helped in the success of this study.

I would also like to thank Prof. Charles Mwendabai Namafe of the University of Zambia, School of Education for the support, knowledge and guidance he gave to me from the selection of the research topic up to proposal writing. I am grateful for his parental advice and attention even during the times when he was very busy with his schedules. I also wish to thank Dr Harry Chabwera of the University of Zambia, Department of Biology for his interest in guiding us on environmental issues especially during the education tour on the mines of the Copper belt Province.

Further thanks also go to the Zambia Environmental Management Agency (ZEMA), Lusaka City Council Waste Management Unit (LCCWMU) and the Ministry of Education, Science, Vocational Training and Early Education officers for the cooperation rendered to me during the period of data collection.

To the Provincial Education Office of Lusaka Province and the District Education Board Secretary of Lusaka District, I say many thanks for allowing me to conduct my research in Lusaka Province and District respectively.

I would like to acknowledge the assistance rendered to me by the School Managers of Kalingalinga, Chawama, Chitukuko, Kaunda Square, Ngombe and Twashuka primary schools of Lusaka urban for allowing me to conduct my research in their schools. Further thanks go to all the teachers and pupils from the above listed schools who responded to the research instruments positively. I am also grateful to Mr Christopher Shankaya and my entire course mates in Environmental Education for their company and academic advice during the years of my study. To all my family members and friends who encouraged me to go on with my studies, I say thank you.

Finally, appreciations go to my wife and tribal cousin Judith Hambulo for being patient when academic pressure was so high and also for the continuous spiritual and moral support.

To God Be All the Glory, Honour and Adoration.

TABLE OF CONTENTS

	PAGE
Declaration	i
Approval	ii
Dedication	iii
Acknowledgements.....	iv
Table of Content.....	v
List of Acronyms.....	ix
List of Tables.....	xi
List of figures.....	xiii
List of Appendices.....	xiv
Abstract.....	xv
CHAPTER ONE: INTRODUCTION	1
1.1 Overview.....	1
1.2 Background to the study.....	1
1.3 Statement of the problem.....	3
1.4 Main Objective of the study.....	4
1.5 Objectives of the study.....	4
1.6 Main research question.....	4
1.7 Specific research questions.....	4
1.8 Significance of the study.....	5
1.9 Delimitation.....	5
1.10 Limitations of the study.....	5
1.11 Summary.....	6
CHAPTER TWO: LITERATURE REVIEW.....	7
2.1 Introduction.....	7
2.2 Process of solid waste management.....	8
2.2.1 Generation or sources of solid waste.....	9
2.2.2 Segregation or separation of solid waste	10
2.2.3 Packaging, labeling and color coding	10
2.2.4 Storage of solid waste	11
2.2.5 Transportation of solid waste	11
2.2.6 Disposal, recycle or re-use of solid waste	11
2.2.7 Solid waste minimization	12
2.3 Knowledge, attitudes and participation on solid waste management...	13
2.4 Importance of education in management of waste	14
2.5 Practices of solid waste management in Africa	15
2.6 Participation of schools in solid waste management.....	16
2.7 Education and waste management in Zambia	17
2.8 Attitudes towards solid waste management.....	19
2.9 Public participation theory in environmental concerns.....	19
2.9.1 Community motivation.....	22
2.9.2 Community participation in key positions.....	22
2.9.3 Allowing communities to initiate projects.....	22
2.9.4 Involvement of local leadership.....	23
2.9.5 Attending to community needs.....	23
2.9.6 Formation of local committees.....	23

2.9.7	Starting long term and sustainable projects.....	24
2.9.8	Using models that allow community participation.....	24
2.9.9	Conclusion.....	24

CHAPTER THREE: METHODOLOGY..... 26

3.1	Introduction.....	26
3.2	Research design... ..	26
3.3	Study site	27
3.4	Target population	27
3.5	Study sample	27
3.6	Sampling technique.....	28
3.7	Data collection procedures.....	28
3.8	Data research instruments	29
3.8.1	Interview schedule.....	29
3.8.2	Questionnaire.....	29
3.8.3	Focus group discussion guide.....	29
3.9	Data analysis.....	30
3.10	Ethical consideration.....	30

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS... 31

4.1	Introduction.....	31
4.2	Overview of knowledge on solid waste management.....	31
4.2.1	Teachers’ knowledge on waste description.....	31
4.2.2	Types of solid waste.....	32
4.2.3	Sensitization of teachers of solid waste management.....	33
4.2.4	Content on solid waste management in primary school curriculum....	34
4.2.5	Topics taught in primary schools related to waste management.....	36
4.2.6	Teachers’ weekly meetings to educate each other on solid waste management.....	38
4.2.7	Methods deployed to minimize waste in schools and their surrounding.....	39
4.2.8	Knowledge on dangers of solid waste in schools and immediate community.....	41
4.2.9	Knowledge flow on solid waste management from schools to communities.....	42
4.2.10	Knowledge dissemination to schools on solid waste management by LCC.....	43
4.2.11	Visits to schools by organizations.....	44
4.3	Overview of teacher’s and pupil’s attitude towards solid waste management.....	45
4.3.1	Teachers’ and pupils’ attitude towards solid waste management.....	46
4.3.2	Pupils’ interest and motivation to manage solid waste.....	46
4.3.3	Teachers’ attitude towards solid waste.....	48
4.3.4	The presence of solid waste management clubs in schools	48
4.3.5	Methods of waste disposal by pupils	49
4.3.6	Reasons for disposing solid waste in undesignated places	50
4.4	Participation by schools in managing solid waste.....	51
4.4.1	Actions taken by schools on disposed solid waste.....	52
4.4.2	Challenges hindering schools’ action to minimize solid waste.....	53

4.4.3	Activities done by schools to reach out to communities on indiscriminate waste disposal	54
4.4.4	Teacher's views on the inclusion of waste management topics in the curriculum	56
4.4.5	Policy formation and implementation on waste management in schools...	57
4.4.6	School partnership with LCC and ZEMA on solid waste minimization	58
4.4.7	Integration and participation of learning institutions in waste management	59
CHAPTER FIVE: DISCUSSION OF FINDINGS		61
5.1	Introduction.....	61
5.1.1	Teachers' knowledge on waste description.....	61
5.1.2	Types of solid waste.....	63
5.1.3	Sensitization of teachers of solid waste management.....	64
5.1.4	Content on solid waste management in primary school curriculum....	67
5.1.5	Topics taught in primary schools related to waste management.....	73
5.1.6	Teachers' weekly meetings to educate each other on solid waste management.....	75
5.1.7	Methods deployed to minimize waste in schools and their surrounding.....	76
5.1.8	Knowledge on dangers of solid waste in schools and immediate community.....	78
5.1.9	Knowledge flow on solid waste management from schools to communities.....	79
5.1.10	Knowledge dissemination to schools on solid waste management by LCC.....	80
5.1.11	Visits to schools by organizations.....	81
5.2	Overview of teachers' and pupils' attitude towards solid waste management.....	81
5.2.1	Teachers' and pupils' attitude towards solid waste management.....	82
5.2.2	Pupils' interest and motivation to manage solid waste.....	82
5.2.3	Teachers' attitude towards solid waste.....	83
5.2.4	The presence of solid waste management clubs in schools	84
5.2.5	School and Community attitude towards waste disposal	84
5.2.6	Peoples' attitude towards waste disposal in undesignated places.....	85
5.3	Participation by schools in managing solid waste.....	87
5.3.1	Actions taken by schools on disposed solid waste.....	87
5.3.2	Action taken by Schools to reduce and minimize solid waste.....	88
5.3.3	Activities done by schools to educate communities on indiscriminate waste disposal	88
5.3.4	Inclusion of waste management topics in the curriculum	89
5.3.5	Policy formation and implementation on waste management in schools...	90
5.3.6	School partnership with LCC and ZEMA on solid waste minimization	93
5.3.7	Integration and participation of learning institutions in waste management	94
5.4	Reflection on the Extent to which Research Questions have been addressed.....	94

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS.....	96
6.1 Introduction.....	96
6.2 Conclusion.....	96
6.3 Recommendations.....	96
6.4 Suggestions for further studies	98
REFERENCES.....	99
APPENDICES.....	107

LIST OF ACRONYMS

AGMs	Annual General Meetings
AIDS	Acquired Immune Deficiency Syndrome
CBOs	Community Based Organisations
CDC	Curriculum Development Centre
CTS	Creative Technology Studies
DEBS	District Education Board Secretary
ECZ	Environmental Council of Zambia
EE	Environmental Education
EEC	Environmental Education Club
EMA	Environment Management Act
EPPCA	Environmental Pollution, Prevention and Control Act
ESD	Education for Sustainable Development
FGD	Focus Group Discussion
HIV	Human Immune Virus
LCC	Lusaka City Council
MESVTEE	Ministry of Education, Science, Vocational Training and Early Education
NEAP	National Environment Action Plan
NGOs	Non-Governmental Organisations
NPE	National Policy on Education
NSWMS	National Solid Waste Management Strategy
PEO	Provincial Education Officer
PM	Preventive Maintenance
PP	Public Participation
PTA	Parent - Teacher Association
PU	Production Unit
SDS	Social and Developmental Studies
SEEP	School Environmental Education Policy
SWM	Solid Waste Management
TDAU	Technology Development and Advisory Unit
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nation Environment Program
UNESCO	United Nations Educational Scientific and Cultural Organisation

UNIP	United National Independence Party
UNZA	The University of Zambia
WMU	Waste Management Unit
ZEMA	Zambia Environment Management Agency

LIST OF TABLES

	PAGE
Table 1: Sample of respondents.....	27
Table 2: Teachers’ description of solid waste	32
Table 3: Types of solid waste	33
Table 4: Sensitization of teachers on solid waste management.....	33
Table 5: Content on solid waste management in primary school curriculum.....	35
Table 6: Topics taught in primary schools related to waste management.....	37
Table 7: Teachers’ weekly meetings to educate each other on SWM	39
Table 8: Methods deployed to minimize solid waste in schools and their surrounding	40
Table 9: Knowledge on dangers of solid waste in schools and immediate community	41
Table 10: Knowledge flow on solid waste management from schools to communities	42
Table 11: Knowledge dissemination to schools on solid waste management by LCC	43
Table 12: Visits to schools by organizations.....	45
Table 13: Pupil’s interest to clean up their school	46
Table 14: Motivation to manage waste by pupils	47
Table 15: Teacher’s attitude towards solid waste	48
Table 16: The presence of solid waste management clubs in schools	49
Table 17: Methods of waste disposal used by pupils	50
Table 18: Reasons for disposing solid waste in undesignated places	51
Table 19: Actions taken by schools on disposed waste	52
Table 20: Challenges hindering schools’ action to minimize solid waste	53
Table 21: Activities conducted by schools to reach out to communities on indiscriminate waste disposal	55
Table 22: Teachers’ views on the inclusion of waste management topics in the curriculum	56
Table 23: Policy formation and implementation on waste management in schools	57

Table 24: School partnership with LCC and ZEMA in solid waste minimization ...	59
Table 25: Integration and participation of learning institution in SWM	60

LIST OF FIGURES

Figure 1	Stages of Solid Waste Management.....	9
Figure 2	Challenges in implementing Solid Waste Management.....	54

LIST OF APPENDICES

Appendix A: Questionnaire for Teachers... ..	107
Appendix B: Focus Group Discussion Guide for Pupils.....	111
Appendix C: Interview Guide for Administrators of Institutions.....	113
Appendix D: Research Budget.....	114
Appendix E: Research Time Plan.....	115

Other appendices:

- Introductory letter from UNZA to conduct Research
- Letter of Permission by student to conduct research in MESVTEE
- Letter of Permission granted by MESVTEE to conduct research
- Introductory letter from PEO to conduct research in the Province
- Introductory letter from DEBS to conduct research in the District
- Letter of Permission by LCC to conduct research in their organisation
- Photocopy of receipt as research fee from LCC

ABSTRACT

Solid waste management (SWM) has become a global burning environmental issue influenced by rapid population growth, urbanization, socio-economic development and the consumerism syndrome of the complex society. Zambia, like many other countries, has not been spared from environmental challenges such as huge heaps of solid waste in undesignated places. Solid waste management in schools and communities desires knowledge, positive attitudes and active participation by all stakeholders.

The aim of the study was to establish whether stakeholders did participate in solid waste management in selected Zambian urban primary schools of Lusaka in a quest to minimize and mitigate the effects of solid waste. The objectives of the study shadowed on assessing knowledge, attitudes and establishing challenges pupils, teachers and other respondents encountered in implementing solid waste management.

A descriptive survey design was employed to analyze, interpret and report the present status of social institution, group or area. The sample was drawn from Lusaka Urban District and consisted of 60 grade six pupils, 36 primary school teachers, 6 primary school administrators, 6 officials from the Ministry of Education, Science, Vocational Training and Early Education, 2 officers from Lusaka City Council Waste Management Unit and 2 officers from Zambia Environmental Management Agency. The study embraced a qualitative and quantitative research design. The research instruments used to collect data were questionnaires, guided interview schedules and focus group discussion schedule.

The results show that most stakeholders (70%) lacked knowledge on waste management due to inadequate education, sensitization and public awareness. Teachers, pupils and officials from the Ministry of Education, Science, Vocational Training and Early Education did not get adequate knowledge from Zambia Environmental Management Agency and Lusaka City Council Waste Management Unit on solid waste management to help them manage waste prudently. The findings further revealed that peoples' negative attitudes towards solid waste made them to dispose it in undesignated places resulting in huge dumps of garbage in drainages, roads, school grounds and behind school wall fences. Other challenges faced by institutions in tackling the problem of waste mismanagement included: inadequate finances, lack of technical capacity and transportation of solid waste.

The study recommends strengthening EE in schools, using innovative science to recycle waste and equipping teachers, pupils and every citizenry with relevant knowledge in waste management. Finally, it is recommended that all institutions must be active in environmental issues such as waste management.

