LEARNERS' ENVIRONMENTAL AWARENESS, EFFECTS ON HOME AND SCHOOL PRACTICES TOWARDS LITTERING: AN ACTION RESEARCH CASE

by

TSEBO KGOTO MATSEKOLENG

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SUPERVISOR: Prof T A MAPOTSE

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DECLARATION

Name : <u>TSEBO KGOTO</u>

Student number : <u>48502928</u>

Degree : <u>ENVIRONMENTAL EDUCATION</u>

Research topic : **Learners' environmental awareness, effects on home and school practices towards littering: An action research case.**

I declare that the abovementioned dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

<u>   </u>   <u>02/10/2017</u>
SIGNATURE   DATE

DEDICATION

I dedicate this dissertation to the following individuals:

My mother Yvonne Masefo Matsekoleng

I convey my heartfelt gratitude to you for laying my educational foundation, for ensuring that, I succeed throughout the academic journey. I appreciate your continuous support, motivations and for encouraging me to always entrust the Almighty God within everything that I do in life. Your undying love during hard times encouraged me to complete this study.

My son Katlego

Your name was a central nerve to the study, which kept me going to ensure I fulfil reasons behind your given name, which means success. You gave the study motivation, strive, hunger, passion, and tenacity. These led to the success of the study. This study resonates with your name and serves as form a motivation for you to strive hard to achieve academic excellence.

My family

Your love and support from birth to the present has played tremendous role throughout my educational journey. Each of you has played his/her part to ensure I succeed and make you proud.

My supervisor Prof Mapotse Tomé Awshar

Thanks for persuading College of Education Committee at the University of South Africa to allow me to register this course. Your efforts and support paved a way for me to complete this study.

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My gratitude goes to Almighty God for providing me with the necessary insight, drive, strength and protection to complete this study during difficult time.

For this study to reach this stage, it was through the help of many people who have directly and indirectly contributed to the success of the study. I would like to express profound gratitude and acknowledgment to the following people:

Tlogatloga e tloga kgale modiša kgomo o tšwa natšo šakeng

ABSTRACT

The presence of pre-packed items contributes toward littering in schools and at home milieu. Most people particularly, and learners' discard packages of pre-packed wrappers on the ground, thus contribute to littering. This study is intended to help all relevant stakeholders to plan activities that could reduce littering. The study is grounded within the critical theory and living paradigm exploring the effect of household and school practices on learners' environmental awareness (EA) towards littering. This case study employed action research as a methodology to unpack the problem. Fourteen learners, who are referred to as co-researchers in this study, were selected randomly from seven classes and their parents were inevitably included in the study. Three cycles were conducted with the co-researchers. Five data collection methods are used to collect data. Tables, score total percentages and coding used to analyse data. The results of the study show that environmental activities could be useful within home and school setup and continued practice of environmental activities will in the end conscientise learners towards littering if approached through action research.

Key terms:

Action research; Critical theory; Environmental awareness; Environmental education; Environmental action research activities; Household practices; Littering, Living paradigm; School educational processes

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LIST OF ACRONYMS AND ABBREVIATIONS

ACC	:	Accounting
AR	:	Action Research
B.Ed.	:	Bachelor of Education
BS	:	Business Studies
C2005	:	Curriculum 2005
CA	:	Creative Arts
CAPS	:	Curriculum and Assessment Policy Statement
CAT	:	Computer Applications Technology
CS	:	Consumer Studies
DBE	:	Department of Basic Education
DoE	:	Department of Education
EA	:	Environmental Awareness
EAR	:	Environmental action research
EE	:	Environmental Education
EGD	:	Engineering Graphics and Design
EMS	:	Economic and Management Sciences
ENGFAL	:	English First Additional Language
FET	:	Further Education and Training
GDE	:	Gauteng Department of Education
Geo	:	Geography
GET	:	General Education & Training
HOD	:	Heads of Departments
LO	:	Life Orientation
M.Ed	:	Master's in Education
NCS	:	National Curriculum Statement
NEMA	:	National Environmental Management Act
NGO	:	Non-Governmental Organization
NPDE	:	National Professional Diploma for Educators
NS	:	Natural Sciences

PBE	:	Place-Eased Education
RCL	:	Representative Council of Learners
RNCS	:	Revised National Curriculum Statement
Rs	:	Recycle, Re-use and Reduce
SADTU	:	South African Democratic Teachers Union
SEC	:	School Environmental Committee
SEP	:	School Environmental Policy
SGB	:	School-Governing Body
SMT	:	School Management Team
SS	:	Social Sciences
Unisa	:	University of South Africa
WESSA	:	Wildlife and Environmental Society of South Africa

CHANGES TO NOTE

During the research journey, two major changes occurred within the study between commencement and submission of this research report. These major changes are therefore outlined below.

Study title

University research committee within education college, at the beginning of this master's in Education (MEd) study my research title was approved which was titled "School learners' environmental awareness (EA) and attitude towards littering: the role of household and school education". After the analysis of the data, my supervisor and I then realised a need to change the title, and therefore the revised and final title is presented as: "Learners' environmental awareness, effects on home and school practices towards littering: an action research case".

Personal

At the start of this study, I was known as Mashiloane Tsebo Kgoto (TK). However, after having successfully applied for the amendment of my surname at the Department of Home Affairs, my surname has now changed to Matsekoleng Tsebo Kgoto (TK). This change to my surname was due to my mother having been married to the Matsekoleng clan.

CHAPTER ONE
ORIENTATION OF THE STUDY

1.1   INTRODUCTION

Democracy in South Africa brought various changes and one of them was educational transformation. Therefore, the South African education system went through several educational transformations post 1994, with an implementation of new curriculum approaches. These include Curriculum 2005 (C2005), implemented in 1998, Revised National Curriculum Statement (RNCS) in 2002, National Curriculum Statement (NCS) in 2006 and the newly implemented Curriculum and Assessment Policy Statement (CAPS) adopted in 2012 (Pillay, 2014). All these curriculum transformations and reviews in South Africa were aimed to address political and socio-economic factors that affect our educational progress and environment, accordingly support critical theory notion of emancipation. Politically, the changes within the curriculum are meant to address the educational inequalities of the past, while socio-economically, they are meant to address the poor state of the environment. It is increasingly evident that the quality of our environment is being degraded. The poor state of the environment at the home level is generally associated with racial and ethnic difference, which in turn impact upon socio-economic conditions, which may be attributed in part to environmental injustice, whereby different sectors of the population experience differential exposure to environmental hazards (Mnisi, 2011).

All of these curriculum transformations had environmental education (EE) as a cross-curricular discipline and lately environmental content (in CAPS). This requires all teachers in all subjects to consider an environmental focus (Irwin & Lotz-Sisitka, 2005: 53). Furthermore, an important reason for integrating or linking environment and education in South Africa is that EE contributes significantly to the transformation and development of South African society. In

addition, environmentally literate citizens are able to make wiser decisions that take into account the effects of development on their environment (Maluleke, 2015). The environmental focus was intended to equip learners with environmental knowledge so that they can be able to solve environmental issues such as littering in and outside the schools.

However, these curriculum transformations seem to have a minimal impact on learners' environmental awareness (EA). For example, littering continues to be a growing environmental problem in South Africa, both in the home and school environment. As economic development increases, the amount of packaging also increases (Mambinja, 2008: 10). People throw away papers, plastics, tins, and bottles anywhere in the streets (Sethusha, 2006: 54). Several factors could be contributing to the continuing persistence of littering in schools and at home environment. Therefore, the current study is intended to explore the effects of home and school practices on learners' EA towards littering through action research (AR) approach using critical theory and living paradigm. Our understanding of the educational situation depends on the context within which we encounter it, and our own theoretical knowledge and assumptions influence our observation (Nieuwenhuis, 2008). Hence, these theories are relevant in this study to explore the topic through discourse and descriptive data.

The existence of pre-packaged goods, consumer behaviour of learners, parents and teachers, and the nature of goods consumed at home and school, have contributed to deteriorating environmental school grounds (Makonya, 2004). Some of those packaging is discarded on the school grounds, which leads to littering. However, some of those pre-packaged items can be recycled such as plastic papers. Komane (2005: 1) argues that seemingly, much of the environmental degradation that is experienced today is the result of the failure of our society and its educational systems to provide citizens with the basic

understandings and skills needed to make informed choices about interactions and interrelationships in the environment. Therefore, it was necessary to conduct this study in order to explore the implications of home and school practices on learners' EA towards littering in South African schools and community contexts.

1.2   BACKGROUND OF THE STUDY

Back in the 1990s when I was doing my primary school education, covertly I was sensitised to respect fragile environment through environmental activities such as picking up papers. Every day before lessons commenced and after school, we carried out such a duty. Also after school, we swept our classrooms and tidied up before we could go home. In addition, we converted candles into floor polish using both heat and paraffin. This polish was used to make classrooms and floors, and teachers' office smell good and to reduce dust on the floor. Back then, we also celebrated environmental days such as Arbour Day. Each learner in the school would bring a flower and/or plant from their homes to beautify the school and classrooms. Moreover, maintaining vegetable garden was a daily activity in the school.

From being a learner to now a secondary educator, I discovered that many things have changed. For instance, government employed grounds staff to clean school grounds. As a result, the focus was shifted to indoor learning and less focus was given to outdoor-based learning curriculum. Subsequently, the litter issue in the school over the past six years of my teaching career at the school has been worsening. I observed that learners littering behaviour does not improve. Each day learners litter the school grounds and classrooms. I therefore embarked on this study as part of EA on learners, using AR as an approach to sensitise the learners at school about EA at both school and their homes. Through living paradigm, learners will share their experiences and concerns with me in their context and analysis the situation to overcome the social environmental issue. Subsequently critical theory intends to change

situations by emancipating co-researchers with environmental knowledge and skills utilising environmental action research (EAR) activities.

Many environmental issues such as littering that are incipient in our modern societies are largely driven by our modern lifestyle. People buy pre-packed foods such as takeaways, small electronic appliances such as calculators and other disposable items. Once these pre-packed goods are consumed or used people throw the package away on the bare ground, which results in littering. Littering waste is an unsustainable practice in modern societies (Jackson-Tyree, 2012: 13).

Most learners buy packed food products and fruits from their schools' tuck-shop and from vendors all over. Consequently, the packaging waste materials are left anywhere on the grounds, resulting in littering school environments (Makonya, 2004). As De Beer, Dreyer and Loubser (2005: 6; 2014: 6) attest, we now live in a throw – away society because most items that people buy come wrapped in packaging of some sort and discard the packaging on the grounds after consumption, causing littering.

The problems associated with the disposal of waste in public places, including schools premises, are numerous and they include littering of food remains and other discarded materials (Ana, Oloruntoba, Shendell, Elemile, Benjamin & Sridhar, 2011: 25). Decisions that we make in our everyday lives directly or indirectly have impact on the environment. For instance, disposing papers and other items on the ground improperly cause littering and other health issues such as bad odour within our living space. Subsequently, this deteriorates general aesthetic of the home and school environment.

Litter is any waste that has been misplaced on the ground (Mbatha, 2003: 44). Furthermore, litter is an environmental hazard that is threatening human life, for example broken glass and rusty cans, which could cause injuries and are a

health hazard to learners when they are playing outside (Mawela, 2008). Land pollution and other associated environmental problems are imminent if littering is not controlled or managed.

Litter has been a major problem in both developed and developing countries worldwide (Mathe, 2014; Ocansey, 2006) and yet both are still struggling to address it. South Africa is one of the developing countries, which still struggles to address littering. Perhaps parallel curriculums of home and school education might have contributed to the problem. Litter is widespread in both urban and rural areas; plastic wrappers and discarded items have become common sights (Ocansey, 2006). In addition, South African townships in Gauteng Province such as Thokoza, littered items such as plastics are visible which makes the area to be untidy. Throwing of items intentionally or unintentionally pollutes the environment and some of those littered items such as plastic bottles can be recycled instead. Recycling is a better alternative to dumping (Ocansey, 2006: 32) and saves environmental exploitation of resources and boost economic growth.

Littering costs governments a lot of money in cleaning the polluted environment such as, for instance, attending to illegal dumping of garbage on streets and open spaces. Littering has a negative impact on tourism industry. It degrades the general aesthetic of the area that leads to loss of money in the industry. In addition, littering blocks drainage system as dumping of refuse in drains prevents water from flowing freely after rainstorm, which may lead to flooding (Ocansey, 2006: 28).

Discarding of papers and other items by learners all over the school ground and at home has negative impact on the environment. It seems certain factors have influence on their littering behavioural pattern. This study sought to understand implications that home and school practices has on learners' EA towards littering.

1.3   THE PROBLEM STATEMENT

South Africa in recent years has seen the emergence of various sectors and public initiatives to help foster an environmentally conscious society (Mnisi, 2011: 4). These initiatives include integration of EE in the education system, Eco-schools Programme, Bontle ke Botho Campaign, and other initiatives to address environmental issues such as littering. Gauteng Province on the 31 January 2016 re-launched Bontle ke Botho campaign in Alexandra Township to address littering and other environmental issues within the province. This indicated that littering is a social issue and which therefore needs our urgent attention. Moreover, the South African Constitution also reiterated that every citizen has a right to a healthy environment. A clean and healthy environment is therefore dependent on the environmental literacy of people (Loubser, Swanepoel & Chacko, 2001).

I therefore expect the home and school education to be important factors in shaping learners' EA, which up until now may not have received the attention it deserves (Coertjens, Boeve-de Pauw, De Maeyer & Van Petegem, 2010: 499). However, the question still remains as to why littering still persists at home and school despite numerous attempts to reduce littering in and outside the school. It seems educational initiatives have done little to ameliorate the situation. Therefore, this study explores the effects of home and school practices on learners' EA towards littering. Their lived experiences in their immediate environment will help me to unpack this study.

1.4   THE RESEARCH QUESTIONS

How can an action research approach be used to address learners' environmental awareness effects of both home and school practices towards littering?

The following sub-questions were considered to unpack the problem:

- How can the home and school serve as institutions to shape up learners' environmental awareness regarding littering?
- To what extent do the home practices and school activities contribute on learners' environmental awareness with regards to littering?
- Is there any relationship between home practices and school activities that could influence learners' environmental awareness towards littering?

1.5 THE AIMS AND OBJECTIVES OF THE STUDY

1.5.1 Research aim:

The aim of the study was to examine the influence of both the home and school institutions on learners' environmental awareness towards littering in Thokoza Township.

1.5.2 Research objectives:

- To explore the possibilities on how the two institutions, home and school, can shape up learners' environmental awareness regarding littering.
- To investigate the extent to which the home practices and school activities contribute on learners' environmental awareness towards littering.
- To examine the relationship between home practices and school activities that could influence learners' environmental awareness towards littering.

1.6 SIGNIFICANCE OF THE STUDY

Home and school practices around EA play an influential role on learners' acumen. It is envisaged that both institutions can inculcate awareness, responsibility, respect, self-esteem and other factors that contribute to learners' growth. In order to raise learners that are environmentally literate and responsible, it is necessary to investigate the effects of both institutions on learners' EA towards littering through AR cycles. AR cycles will address

littering and improve learners' environmental knowledge because AR is a hands-on approach in nature incorporating living paradigm.

Knowing the effects of both institutions on learners will help various stakeholders to plan activities that will be related to developing environmental responsibility towards litter. This would contribute towards EA and more so relate to learners' everyday lives. Learners should be conscious that throwing banana peels on the floor, snack plastics on the ground and other unwanted items everywhere could pose a health hazard and a danger to fellow citizens. Some of these unwanted items can be recycled. For instance, fruit peels could be used to create manure. Strategies, methods, approaches, and techniques of taking care of the environment by using, for instance, the litterbin after consumption, should be taught to learners to avoid certain diseases that can emanate from littering.

The study shed light into how the home and school practices contribute on learners' EA towards littering, and effects that both institutions have on learners. Aftermath of the study will help curriculum designers, teachers, parents, and other stakeholders to plan activities that could reduce litter in schools and at home. Knowing the effects of home and school practices, teachers can integrate litter issue in their lesson plans and plan activities that encourage active learning, which could result in solving litter problems within the school and the community. Environmental policies and environmental monitoring tools such as litter pick up duty roster and other relevant methods can be designed to address littering in and outside the school terrain. This would lead to less funds being spent to keep the environment clean and the appearance of the school and the living area will be appealing. Furthermore, knowing the effects of both institutions may provide significant insights for the development and modification of the EE curriculum in future (Wong, 2004) and contribute to the existing literature.

1.7 LITERATURE REVIEW

Education (formal and informal) can be used as a platform to address environmental issues, such as littering, global warming and other issues, across the globe. These environmental issues in turn have some negative impacts on the environment. In this case, 'education' will be seen as a catalyst that contributes to environmental problems - awareness tool. This would ensure that learners acquire the knowledge to become aware, to care about the environment, and to develop sensitivity through the environment (Mawela, 2008). EE is integral in educating people to preserve and conserve nature.

I have critically evaluated previously conducted studies that are relevant to the current study in order to contribute towards new body of knowledge on the effects of home practices and school activities on learners in order to close gap. For that reason, I have thus reviewed 25 related studies out of 227 from different sources and countries. The remaining 182 studies are related to this study to a certain extent. From these 25 related studies, only five studies, that is, 20%, were conducted in South Africa. Moreover, five studies were conducted in other African countries such as Ghana, Zimbabwe, Nigeria, and Kenya. In addition, 36% of these related studies were conducted in Africa. This further revealed that the proposed topic is partially investigated among African countries. These 25 studies included nine dissertations, 13 research articles, one honours study, one research paper and one original research paper, which were downloaded from different institutional repositories and journals database such as environmental and science education, and textbooks from libraries. I have also discussed and reviewed sources in Chapter 3 in their detail.

This study emanates within living research paradigm and critical theory in order to understand and explore the effects of home practices and school activities on learners' EA towards littering. Figure 1.1 shows the structure of the reviewed literature to lay theoretical foundation of the study. Concepts on this figure were used to guide me throughout the study in order to unpack

proposed title. The figure shows littering as the main central focus and arrows branching to sub-concepts to assess their effects on the issue. The focus starts from inside and branching outside to address littering.

Figure 1.1: Theoretical foundation of the study

Chapter 3 unpacks theoretical foundation of this study.

1.8 RESEARCH DESIGN

Research design is a framework of the study that lays a structure for research instruments, selection of participants, data collection, and data analysis.

Exploring and understanding peoples' behavioural pattern is a mammoth task. The stories, experiences and voices of the respondents are the mediums through which we explore and understand reality (Nieuwenhuis, 2008: 55). As a result, I have chosen qualitative design to explore the effects of home practices and school activities on learners' EA towards littering. In qualitative research, words are descriptive tools to understand and explore the phenomenon.

This study deals with littering as a negative social issue that affects our environment negatively. To understand the phenomenon much better, AR approach was used. The goal of AR is to pursue action and knowledge in an integrated fashion through a cyclical and participatory process (O'Leary, 2014). Through AR cyclical process, intervention programme was implemented to address the littering issue experienced at home and at school working with selected Grade 8 learners as co-researchers. I discussed this section further under study methodology (Chapter Four).

1.9 RESEARCH METHODOLOGY

Research methodology deals with procedures used to select study area, population and sampling procedures, data collection, and analysis. It is a procedural way of connecting dots to have a full picture. Chapter 4 provides detailed information on these subsections.

1.9.1 Study/research site location

This study is conducted in South Africa. South Africa has nine provinces, and these are Mpumalanga, Limpopo, Gauteng, Free State, North-West, Northern Cape, Western Cape, KwaZulu-Natal and Eastern Cape. Out of the nine provinces, Gauteng is one of them with better quality life and ample of opportunities. In addition, Gauteng Department of Education (GDE) is divided into 15 districts to serve the community with good quality education. I therefore conducted this AR case study in Ekurhuleni South District, in a township known as Thokoza. This township is situated in Ekurhuleni, in East of Johannesburg. Ekurhuleni is a Tsonga for a "place of peace" and this region was formerly known as East Rand (http://www.statssa.gov.za). Thokoza Township has five secondary schools and 12 primary schools as study sites. I chose one secondary school because that is where I was working as a teacher employed by GDE. The name of the institution is Hunadi* Secondary School. (Please note: I have used pseudonym for this institution to maintain privacy and anonymity).

Figure 1.2 shows the research site location of the study. It is like an onion with its layers. Each layer in this context represents an area, which unfolds as follows, country, province, region, district, and school. This was done to collect data and to limit the study area to focus on one institution.

| Hunadi secondary school |
| Ekurhuleni South district |
| Ekurhuleni |
| Gauteng Department of Education |
| South Africa |
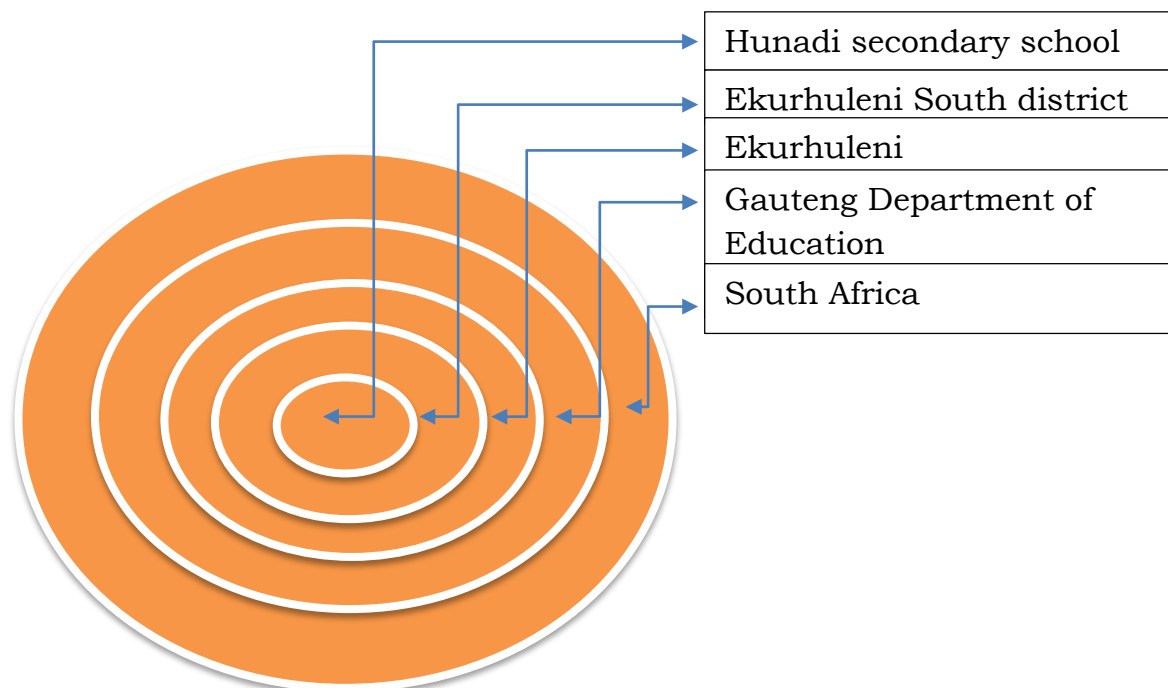
Figure 1.2: Research site

1.9.2 Population and sample

Qualitative sampling is done to increase the utility of information collected from small samples (McMillan & Schumacher, 2010: 326). Secondary school comprises of two bands, and these are, General Education and Training (GET) and Further Education and Training (FET). GET band is from Grade R to 9. Conversely, the FET band is from Grade 10 to 12. GET band further is categorised into three phases, namely, Foundation Phase (Grades R to 3), Intermediate Phase (Grades 4 to 6), and Senior Phase (Grades 7 to 9). This study was conducted in Senior Phase with selected Grade 8 learners. I chose Grade 8 because they are in their third year of newly implemented curriculum

known as CAPS. A secondary school has five grades, which includes Grade 8 to 12.

I have approached learners in their classes and explained the purpose of the study. Therefore, after explanation, some learners volunteered to be part of the study. I have thus used convenience random sampling out of volunteered group to select two learners per class out of seven classes. I chose this type of sampling procedure because it is quick and cheap, and learners are accessible to me and vice versa (Maree & Pietersen, 2008).

Moreover, their parents/guardians were consequently included in the study. I used available electronic class list saved on a Microsoft Excel program according to numbering system (e.g. 1-50) to select learners by applying randbetween function. Randbetween function is a Microsoft Excel function that returns whole number randomly between two specified numbers. This enhances equal chances among volunteered learners to be selected. I selected one secondary school out of five and 12 primary schools owing to its close proximity to me and to avoid incurring financial costs. Furthermore, one school was selected owing to period of the research project and research approach.

1.9.3 Data collection methods

This study aimed to understand and explore the implications of home practice and school activities on learners' EA towards littering. These research instruments, such as observation schedules, journal writing, questionnaire, photos and, semi-structured interviews were used to collect data. In addition, these research instruments were used to generate information through triangulation technique to ensure legitimacy of the research findings. Furthermore, I used these research instruments because they are relevant to the study.

1.9.4 Data analysis

I used tables, percentages, coding process, and photos to analyse data. Furthermore, I used a descriptive technique to analyse data. Detailed discussion is provided under Chapter 4.

1.10 ESTABLISHING LEGITIMACY OF THE RESEARCH FINDINGS

Krefting (1991: 217) discusses research strategies such as credibility, transferability, dependability, and confirmability. The latter were applied to establish the trustworthiness of the study in order to ensure consistency and truthfulness of the research findings.

1.10.1 Trustworthiness

Methods that are chosen in the study ensured the trustworthiness of the results because I was observing participants using observation schedules, captured photos of the participants' homes and school. Co-researchers completed the same questions of two sets of questionnaire and the parents/guardians answered same questions during the interviews. The collected data from observations, photos, questionnaires and interviews was evaluated to compare and unpack similarities and differences to ensure that results are trustworthy. It is generally accepted that engaging multiple methods of data collection, such as observation, interviews and questionnaires, will lead to trustworthiness conclusions (Nieuwenhuis, 2008: 80). The supervisor served as a critical reader to critique my work. In addition, I used journal writing to track progress of the study, including success and challenges.

1.10.2 Credibility

Credibility refers to the truthfulness of research findings and conclusions (McMillan & Schumacher, 2010: 104). Triangulation method will be applied on data collection instrument, such as observation schedules, journal writing, photos, questionnaires and semi-structured interviews to analyse the results for credibility and trustworthy. Triangulation is a powerful strategy for

enhancing the quality of the research (Krefting, 1991: 219). Moreover, spending more time on the field-observing participants will reveal hidden behavioural pattern whereas using journal writing to reflect on the observed events will ensure integrity of the research findings.

1.10.3 Transferability

Teane (2007: 45) asserts that the difficulty with qualitative research is situational uniqueness. The particular group studied may not relate to others and hence conclusions may not be transferable. This study was a case study that used AR to explore the implications of home practice and school activities on learners' EA towards littering. Therefore, the research findings will apply within the studied institution or context. Convenience sampling was used in the study to select participants.

1.10.4 Dependability

Teane (ibid) asserts that it is the stability of data over time and is obtained with stepwise replication and inquiry audit. Dependability criterion relates to the consistency of the findings. This means that if the study is repeated in a similar context with the same participants, the findings would be consistent. Moreover, code-recoding procedure was conducted in the study. This was followed by triangulation method in all data collection instruments in order to reveal hidden ideas in between data and to address the legitimacy of the research findings. Coding process was continuously conducted throughout the study in all research instruments.

1.10.5 Confirmability

Confirmability is referred to as 'audit ability' whereby an external auditor attempts to follow through the natural history or progression of events in a project to try to understand how and why decisions were made (Teane, 2007: 45). This means that dots are recollected through AR cycles to complete the

puzzle through triangulation method to confirm and conclude the study. Re-collection of dots through AR cycles is a confirmability audit trail.

1.11 ETHICAL CONSIDERATIONS

Ethics can be defined as set of rules that guided me throughout the study. Ethics rules in AR entails respect, honesty, power, voluntarism, anonymity, harmless, teamwork, freedom, informed consent, assent letter for minor participants, values of democracy, confidentiality, privacy and permission (Somekh, 2006: 47). These guidelines have been put into place to ensure that participants are not harmed or deceived, and that they are informed regarding what participation entails, that they have agreed to participate, and that they have been assured that the confidentiality of their responses and their participation will be maintained (Cher, 2013: 81). This study is based on voluntary participation and the participants can withdraw anytime if he/she feels to quit and no incentive will be given. Pseudonyms were used to protect the identity of participants and institution under the study. Therefore, I wrote letters to parents/guardian (Appendix 1.1), learners (Appendix 1.2), school (Appendix 1.3), GDE and sought ethical clearance from University of South Africa (Unisa). Ethical clearance certificate from Unisa is in Appendix 1.4. In addition, Higher Education Institution also ethically cleared my study and the certificate is in Appendix 1.5.

1.12 PRELIMINARY CHAPTER OUTLINE

This study covers the following chapters:

Chapter One: Orientation of the study

Chapter One outlines introduction, background of the study, the problem statement, research questions, aim and objectives of the study, and the significance of the study. The chapter further outlined the synopsis of literature review, research methodology and preliminary outline of all chapters.

Chapter Two: Conceptualization of home practices and school activities on environmental awareness

Chapter Two explains all concepts/terms that are included in the title of the study and conceptualise it within the context of the study.

Chapter Three: Literature review: integration of environmental education within school curricula and home practices

Chapter Three discusses literature relevance of the study. Literature review was collected from secondary sources, such as dissertations and theses, textbooks, the internet, government documents, newspapers, journals, periodicals and articles. In addition, data was collected from primary sources as well as observation schedules, journal writing, questionnaires, photos, and semi-structured interviews.

Chapter Four: Study methodology

Chapter Four describes research methodology, methods and techniques. Legitimacy of establishing research findings were further explained to ensure the integrity of the findings. In addition, triangulations of sources were discussed to address problems that might be encountered among research instruments. AR was used as study design approach and AR circles are highlighted.

Chapter Five: Contextualising research journey

Chapter Five presents various topics such as school context, families' case studies and their photos, interviewing techniques, AR challenges and reflections on the study. Furthermore, I present the programme of the study engaging co-researchers. This chapter highlights activities of term one as well as hinting the reflections of the research journey.

Chapter Six: Environmental action research activities and research discussions

Chapter Six presented two AR cyclic processes comprising of term two and three. The word "term" was clarified in the study. Throughout the terms, EAR activities were conducted with co-researchers at home and school and EAR activities were defined. In each term, I described the EAR activities and reflections, and summation of the terms. Analysis or interpretations from each research instruments are discussed. In addition, this chapter presents research questions, research findings and discussions based on AR activities of terms two and three.

Chapter Seven: Conclusions and recommendations

In chapter seven, I highlight synopsis of the AR chapters. These chapters reported execution of proposed objectives. Progressive AR spiral cycles at school and home in collaborative manner with co-researchers were presented and discussed. At school, co-researchers were engaged in four cycles while at home two cycles were engaged. In addition, I summarised both learner activities per cycle.

I have summarised the research findings under the subsections: home practices, school practices and put overall findings, to intensively scrutinise the findings and for readers to trace my final conclusions. This chapter provides recommendations for the study for three institutions comprising home, schools and Department of Basic Education (DBE). These institutions positively or negatively influence children's awareness of littering.

This chapter underlines future studies that could be conducted to explore the study through various research methodologies and different participants. In addition, I present reflections of the study on four levels including personal professional, academic and teaching strategy. These levels reflect the capability of the study. I outlined the limitations of the study since I could not reach

other areas. These limitations serve as guidelines for other scholars to consider when embarking on this study in the future.

1.13 CONCLUSION

In this chapter, the background of the study, the problem statement, the research questions, the aim and objectives of the study, and the significance of the study were discussed, among others. Furthermore, the forthcoming chapters were outlined. In chapter two, I discuss the theoretical foundation of the research.

CHAPTER TWO

CONCEPTUALIZATION OF HOME PRACTICES AND SCHOOL ACTIVITIES ON ENVIRONMENTAL AWARENESS

2.1   INTRODUCTION

In this chapter two, I unpack all concepts/terms used from the title of the study and conceptualise it within the context of this study. This study unpacked the following concepts:

- Environmental Awareness (EA).
- Littering.
- Action Research.
- Home and school practices.

Figure 2.1 displays conceptual framework model that lays the structure of this chapter graphically to emphasise the importance of outlining concepts within this study.

Figure 2.1: Conceptual framework of the study

2.2   ENVIRONMENTAL AWARENESS

World conferences such as the ones that were held in Stockholm in 1972, Belgrade 1975 and Tbilisi 1977, created a very new awareness about the environment in the world today (Dauti, 2014: 8). Subsequently in South Africa, various programme such as Eco-schools Programme were promoted in schools

to raise awareness among learners towards environmental issues including littering. As well, curriculum transformations in the South African education system formed part of integrating EA among school subjects.

Various scholars from several fields of discipline have defined the concept EA and consequently it has different connotations. Such scholars as Saxena and Srivastava (2012) define EA as the mirror image of all the knowledge one has after going through rigorous curriculum in the school, which provides detailed knowledge about environment and current environmental problems. A person with high EA realises that an effort is required individually and in-group, to improve general environmental conditions. EA is an important factor for the development of the children's character (Abeliotis, Goussia-Rizou, Sdrali & Vassiloudis, 2010: 337).

Moreover, EA could be defined as an art of imparting knowledge in people so that they develop new environmental perception (Dauti, 2014: 2). EA entails helping social groups and individuals to acquire an awareness of and sensitivity to the total environment and its allied problems (Kant & Sharma, 2013: 34).

For the purpose of this study, EA is defined as an integral aspect of environmental education (EE) that conscientise learners around their surrounding environment such as placing garbage inside the litterbin and respect their environment.

2.3   LITTERING

The term littering has been extensively defined. I have evaluated few definitions in this study.

According to Schultz, Bator, Large, Bruni, and Tabanico (2013: 36), litter refers to items that are discarded by an individual, but it can include any item that is

in an unacceptable location regardless of the origin. This could not only include the candy wrapper dropped on the ground but also the newspaper that blows out of a trash can. Littering is environmentally destructive, and represents a hazard to plants and animal life because litter contain injurious objects, such as syringes, broken bottles, plastics, metals and broken glasses that can hurt not only children but adults as well (Ajaegbo, Dashit & Akume, 2012: 83). Moreover these scholars, Murphy (2012), Hoppe, Bressers, de Bruijn, Garcia (2013), Roper and Parker (2013) define litter as a social problem.

For the purpose of this study, litter refers to any garbage that has been discarded and/or misplaced on the bare ground such as food remains, plastic wrappers, papers and other unwanted items, which makes the school or home unattractive and untidy.

2.4   ACTION RESEARCH

The concept action research (AR) has been coined by Kurt Lewis decades ago and ever since then it has gained momentum with different connotations. AR has been traditionally defined as an approach to research that is based on a collaborative problem solving relationship between researcher and client that aims at both problem-solving and generating new knowledge (Coghlan & Brannick, 2010: 35). According to Cher (2013: 1), AR is an ongoing process that individuals use to constantly improve their practices. Furthermore, AR is participatory and collaborative in the sense that it takes place in social context and involves other people (McNiff & Whitehead, 2011: 36). AR is also situation-based (Koshy, 2010: 2).

For the purpose of this study, AR is defined as an environmental tool that aims to raise and improve learners' EA towards littering at their homes and school.

2.5   HOME AND SCHOOL PRACTICES

Children's motives and competences for participating in family and school are dialectically related to the family, school practice and the values for helping children to grow up in these institutions (Fleer & Hedegaard, 2010).

Home practices refer to everyday home life embedded in family routines and habits, including parenting practices, life histories to shape the offspring or children in order to increase environmental knowledge, change attitudes or modify specific behaviours (Payne, 2005). Conversely, school practice refers to routine tasks of cleaning classrooms and latrines, mending the fence and picking up litter in the compound (Onyango-Ouma, 2006).

In this study, home practices refer to domestic chores that residents perform which includes daily routines such as cooking, cleaning the house and yard, washing clothes, gardening and other activities. Conversely, school practice refers to daily school routine activities such as sweeping, washing windows, watering garden, and other activities that promote hands-on environmental activities that could improve learners' EA and environmental knowledge.

2.5.1 Home environment

Home environment refers to social-economic, political and biophysical aspects that influence people's (family and extended members, and leaseholders) living conditions and their action towards the environment.

2.5.2 School environment

The school environment in this study refers to immediate school surrounding such as garden, school buildings, playing ground, vendors' selling points and food courts where learners interact with the environment.

2.6   CONCLUSION

This chapter explained the meaning of concepts/terms used in the study. Chapter 3 discusses literature review: Integration of environmental education within school curricula and home practices.

CHAPTER THREE

LITERATURE REVIEW: INTEGRATION OF ENVIRONMENTAL EDUCATION WITHIN SCHOOL CURRICULA AND HOME PRACTICES

3.1 INTRODUCTION

Over decades, various studies have been conducted to explore the impact of human activities on the environment and the effects of environmental issues on the environment. Littering is one of the environmental issues that have been extensively researched. Nevertheless, littering sadly still persists in our lifetime. Home and school education can be used as platforms to address environmental issues, such as littering and global warming among other issues occurring locally, nationally and internationally. These environmental issues in turn have some negative impacts on the environment and humankind. In addition, the changes humans have made in the environment in turn affected our societies and our histories (Hughes, 2006: 1). For instance, societies now rely on certain individuals to keep the environment clean. As a result, this could perhaps make them to be irresponsible.

3.2 THE CONCEPT LITERATURE REVIEW

The literature review is conducted during several phases of the research. I need to become familiar with the broad topic, and then proceed to demarcate and refine the research question to a manageable, focused subtopic or subsidiary research question (Le Roux, 2014). In addition, the focal point of literature review is to pinpoint gaps within the existing literature. In this chapter, I critically evaluate previously conducted studies that are relevant to the current study per section to shed some light on the effects of home and school practices on learners' EA towards littering. Literature has been reviewed under the following aspects:

Figure 3.1: Literature review conceptual framework

Figure 3.1 shows the overflow and interconnects of concepts aimed to demonstrate the broad topic of littering and how it could be addressed within home and school terrain.

3.3   LITTERING

This section of the scholarly review looks at studies that have been conducted in EE but as well in other fields of educational discipline that are related to this section.

Littered items on the bare ground such as food remains, plastic wrappers, and papers make the school or home unappealing and untidy. These littered items can pollute water quality in the oceans, rivers, streams, dams, and ponds. In turn, the government is forced to spend huge amounts of public money to clean contaminated water and polluted land.

Litter issue affects drainage system as it clogs the drains. Furthermore, choked drains system provide excellent breeding grounds for mosquitoes besides causing flooding during the monsoon (Das, 2014: 11). In turn, mosquitoes will cause diseases such as malaria. Choked drains will as a result cause bad

odour, which pose threat to human health. Litter prevention and control relies on the effectiveness of both home and school education. Education is a vital part in litter prevention (Ocansey, 2006: 101).

In the following subsections, I discuss litter issue at global scale and in South Africa and also explore littering at home and school in that order.

3.3.1 Littering at global scale

Litter is a worldwide problem (Malepa, 2014; Mathe, 2014; Ocansey, 2006) both in developing and developed countries. Litter has negative impact on economic sectors such as tourism industry, property and other sectors, as litter makes the area to be disorganised and unsightly.

Muñoz-Cadena, Lina-Manjarrez, Estrada-Izquierdo, and Ramón-Gallegos (2012: 1747) report that young people litter more than older individuals. In addition, males tend to litter more than the females (Mathe, 2014: 25). This indicates that biographic factors such as age and gender have influence on people to litter their immediate environment and this includes children, learners at case studied home and school.

Various studies from different fields reported factors that contribute to littering behaviour. These factors include laziness, lack of vigilance and habit (Muñoz-Cadena et al., 2012); lack/absence of litterbins (Mathe, 2014 & Ocansey, 2006); lack of enforcement (Hing & Gunggut, 2012 & Mathe, 2014); lack of concern and utterance of statements like someone is paid to clean up (Ajaegbo et al., 2012). These factors could be addressed at home and school level. Therefore, this study addressed some of these factors through AR approach with learners at home and school as part of emancipation to develop action competence.

A significant part of the volume of trash generated around the world ends up as litter because litter originates through the actions of people (Ajaegbo et al., 2012: 83). This is because plastic wrappers and papers cover large quantities of imports and exports products across the countries. Once local entrepreneurs receive their packages from their suppliers and consumers buy the goods from factories and/or shops, they discard these covering items on the ground once consumed or used. In addition, the environment is increasingly polluted by socio-economic development activities, or in other words, production and consumption activities of human beings (Hài & Mai, 2013: 139). In this study learners litters home and school environment with plastics and papers.

Consequently, modern societies have become a throwaway entity where people buy things, use them and then throw them away (De Beer et al., 2014 & Malepa, 2014). As a result, people's routine activities affect the environment negatively through littering. Littering behaviour is caused by inadequate information people have about the effects of littering. Moreover, the way of disposing litter in open spaces and oceans is causing problems for wild and domesticated animals (Malepa, 2014: 17). In this study, I have observed dead birds at school, which might have caused by littered items.

A number of environmental campaigns across the world were organised to raise peoples' awareness towards littering. To name a few, Keep America Beautiful, collect a can, adopt a highway, and other campaigns are such initiatives. Government and Non-Profit Organisations (NGOs) sponsored these campaigns. Moreover, Eco-schools Programme was introduced to schools globally. However, this programme is not compulsory but schools can register voluntarily to be part of it. Eco-schools Programme is an international programme that encourages whole-school improvement through better environmental learning and more efficient management of the school environment through experiential and active learning strategies. It offers a range of approaches on how teachers and the school structures can provide

opportunities for learning about, in, through and for the environment (Carvello, 2009: 20). However, these initiatives seem to have done little to ameliorate litter issue across the globe. The present study raised up learners' EA through hands-on daily environmental activities towards littering at home and school. The school was also registered to be part of Eco-school programme to conscientise learners towards littering which achieved its objectives.

3.3.2 Littering in South Africa

South Africa is a developing country with its diverse community and is in no exception from littering. Littering in South Africa is among other environmental issues that degrade the beauty of the environment owing to humans' action (Mathe, 2014). Consequently, health hazard emanates from littered areas.

Malepa (2014: 19), South Africa experiences too much littering in most cities and townships. It is important that the country controls litter even though it is costly. However, there are numerous reasons, which make people to litter all over the cities and townships, such as insufficient litterbins (Malepa, 2014: 19). Litter also occurs in rural areas. For instance, people use bushes to relieve themselves, which thus further affects the quality of water in rivers, and poses health risks on human beings. The reduced water quality leads to a shortage of water as witnessed in Gauteng, Limpopo, KwaZulu-Natal, and Western Cape among others.

Despite littering being an incorrect method of disposing waste, it is widely practised (Garg & Mashilwane, 2015) and has a great impact on the environment, health and the economy (Orock, 2017; Wanjohi, 2016). Incorrect disposal of garbage on the ground costs government money to clean littered areas as stated before. Perhaps lack of EA and general basic education, and ignorance contributes to peoples' incorrect disposing behaviour.

The study conducted by Gumbi (2015) indicated that South Africa was reported to recycle about 10% of annual Municipal Solid Waste (MSW) generated. Furthermore, DEA (2012) the third national waste baseline shows that South Africa generated approximately 108 million tonnes of waste in 2011, of which 97 million was disposed of at landfill. In the order of 59 million tonnes is general waste and 49 million tonnes is unclassified and hazardous waste. In the order of 10% of all waste generated in South Africa was recycled in 2011 (DEA, 2012). Over 42 million cubic metres of general waste is generated every year in South Africa, with Gauteng Province contributing 42% (Nkosi, Muzenda, Zvimba & Pilusa, 2013). Perhaps, this was caused by absence/lack of waste management facilities and lack of proper education. The problem of waste management is also experienced in Ekurhuleni Metropolitan Municipality where this study was conducted. Gumbi (2015: 110) underscores that the volumes of municipal waste disposed of at landfill facilities located within EMM are rapidly increasing annually due to the lack of waste minimisation at source (1 742 667 tons in 2011).

Hence, the South Africa government developed and implemented numerous environmental policies such as National Environmental Management Act (NEMA) 107 of 1998 to protect our fragile environment from degradation. However, environmental policies do little to address littering. People persist to throw away garbage on the ground at home and school. Failure to manage people's littering behaviour will further degrade the environment. Mathe (2014) points out that clean environment is not only a constitutional necessity for South Africans, but it is a basic need for everyone.

3.3.3 Littering at home

Parents are children's first teachers in life, and children sometimes simply repeat what their parents do, even their inadvertent actions (Kai, 2014). Children learn from where and how they live. Unhygienic and/or littered

environment will influence children's action towards the environment. If parents create a loving and supportive home environment and teach their children to understand the enormity of their behaviour and decisions (like choosing to place litter in bins and to clean up after themselves) and also teach them morals, values, and respect for others, then they will be providing a good foundation for social responsibility (Twiggs, 2010). Nevertheless, awareness of learners on litter issue cannot be relied on one institution; both home and school, that is parents and teachers do contribute positively or negatively to learners' EA.

Social norms seem to have an influence on children. Traditionally, boys and girls in society perform various activities. For instance, girls are made to carry out most sweeping and cleaning activities and boys perform maintenance tasks at home or in schools (Ifegbesan, 2010). As a result, perceptions that children have could influence their awareness towards littering behaviour and the environment.

People always have had things to throw away. Littering the environment from disposing packaged foods and goods is widely practiced (Ocansey, 2006: 3). Items such as sweet wrappers and others items are discarded on the ground daily. Subsequently, this littering pollutes the home environment. Most residential areas are family-oriented and generate large volumes of litter. Moreover, the challenge of properly disposing such trash has resulted in the increasing volumes of litter around home (Ajaegbo et al., 2012: 83). Perhaps lack of EA of correct waste handling has resulted in littering (Mawela, 2008: 11). Some of the trash that people dispose on the ground daily includes plastic wrappers and papers. The latter can be recycled to reduce littering and production of new products. More importantly, as AR, this study has successfully used some of the littered items to create artistic work aimed to raise children awareness of littering and reducing littering at home (see Chapter Five and Chapter Six). Our ontological values have transformed

into real-life practices, and this process of transformation is itself a manifestation of generative transformation (Whitehead & McNiff, 2006: 55).

3.3.4 Littering at school

Ana et al. (2011: 25) report that globally, most public schools are facing a high level of pollution because of littering. The visibility of littered items around the school contributes to litter pollution and provides evidence that learners do not consider environmental risks resulting from littering. Litter issue results from general daily activities performed by learners at school. Too much waste emanates from routine activities such as classwork, sweeping, serving of food, and bush cutting, which inevitably degrades the environment (Ana et al., 2011). This degradation was caused by a lack of discipline in schools where learners were not punished for deliberately throwing papers in the classroom and corridors (Doan & Jablonski, 2012; Msezane & Mudau, 2014). In turn, these activities contribute to littering around the school compounds that degrades the attractiveness of the school.

Scholars noted the main causes of littering the school environment. These include negligent, ignorant, lack of respect, concern, monitoring and proper knowledge about the environment, absence of litterbins, and someone paid to clean up (Msezane & Mudau, 2014); lack of punishment and peer influence (Doan & Jablonski, 2012). Some of these factors are addressed throughout this study with the co-researchers through environmental action research (EAR) activities to raise learners' awareness towards littering. Therefore, learning that takes place can be seen as a transformation of mediated influence (Whitehead & McNiff, 2006: 116).

Msezane and Mudau (2014: 371) found that economic advantage is also a cause for land degradation as most learners were able to buy food in paper and plastic bags that later littered the environment. As in the course of breaks, learners buy food from school tuck-shop and vendors, and others eat their

lunch box. Disposal of the garbage on the ground does not make the school dirty only but further pose health threats to people in the school. Mbatha (2003: 3) attests that littering by learners is in fact the most noticeable environmental issue. Items lying around the school ground are evident and no anti-littering control system is in place.

Makonya (2004: 53) reports that most learners and teachers are not concerned about environmental issues including littering, although teachers considered themselves environmentally knowledgeable and are aware of environmental matters. He further states that majority of teachers lack strategies such as litter pick up duty rosters and actions to take to improve the cleanliness of their schools. Consequently, this has negative impact on the learners' littering behaviour. Learners' awareness of the consequences of litter is minimal (Ocansey, 2006: 36).

Learning the effects and causes of litter at tender age, learners are likely not to litter their environment. The school can serve as the environmental learning centre for the children to learn the significance of the environment in their lives.

In summation of the above four subsections, scholars corroborate that littering is a global problem and there are numerous factors contributing to litter behaviour. It was noted that both genders, and young and old do litter. This include learners at home and school throwing papers and other items on the bare ground. This study envisaged to teach and raise learners' EA through EAR activities such as using garbage materials from the kitchen to make manure to curb littering at home and school. The succeeding sections discuss how home and school practices could play a role on learners' awareness towards littering.

3.4   ENVIRONMENTAL AWARENESS EFFECTS ON HOME PRACTICES

In the past decades, we have witnessed a dramatic increase in environmental consciousness worldwide (Hài & Mai, 2013: 129). Encouraging pro-environmental behaviour has become a priority for numerous national and local governments as they seek to address a series of environmental challenges, including littering (Barr, Shaw & Coles, 2011: 3011).

In a home-based setting, children are usually exposed to the domestic aspects of life and use different approaches. The latter include proverbs, myths, folktales, and rituals (Awuah-Nyamekye, 2014); shopping, cooking, cleaning, and gardening (Kara, Aydos & Aydin, 2015: 46); hand washing (Mech & Ojah, 2016); green purchasing (Hài & Mai, 2013); recycling (Barr et al., 2011); water saving (Keramitsoglou & Tsagarakis, 2011); family communication (Dyck, 2012) and other hands-on daily environmental activities to pass on their ecological knowledge to the youth and to raise their awareness. These approaches are used for the purposes of letting people, in particular the youth, to know the importance of the environment and the need to protect and conserve it (Awuah-Nyamekye, 2014). These approaches, if practiced effectively by adults at home, could perhaps reduce littering at home and improve learners' awareness. However, Awuah-Nyamekye (2014: 60) states that there is evidence that indigenous methods of dealing with environmental problems are being overwhelmed by contact with an increasingly global market economy and modernity itself. Perhaps this contributes to lack of awareness on children towards littering behaviour at home. There is a little contestation of the home as a suitable site within which to practice sustainability and address littering (Barr et al., 2011: 3019).

Aforementioned scholars explored EA of household members, farmers, high school learners, and consumers on home practices such as gardening. Each practice differs in a role that can be used to raise children awareness. Nonetheless, their emphasis indicates that different families use different

practices but these are aimed to teach their children and raise awareness. On the other hand, these studies' focus and/or practices were not aimed to conscientise children towards littering nor to address litter issue at home. To fill this knowledge gap, this study explored the effects of home practice on learners' EA towards littering through EAR activities at home, such as crocheting mats using plastic bags, planting trees/flowers and other activities.

3.5 ENVIRONMENTAL AWARENESS EFFECTS ON SCHOOL PRACTICES

Raising learners' EA is important because it is a great investment to the environment and future (Simsekli, 2015). School routine could play a vital role to raise learners' EA since learners spend seven to eight hours, which amounts 35 to 40 hours weekly and five days weekly at school. However, this could be possible if teachers promote daily hands-on environmental activities in their teaching approach and extracurricular activities.

Anijaobi-Idem, Ukata and Bisong (2015: 70) assert that EA significantly relates to school sanitation in terms of classroom sanitation, school compound sanction and provision of refuse dumps. In addition, Yoleri (2012) accentuates that talking about the environment and also creating music are other ways of teaching children about the environment to bring about EA among children as well. Building rhythm instruments out of waste material is another method to teach learners about the environment and to raise their awareness towards littering. On the contrary, Stanišić and Maksić (2014) found that learners do not have enough knowledge to contribute to the development of a healthy lifestyle and EA.

Moreover, Simsekli (2015) posits that few learners are aware of the environmental problems but their knowledge is limited. This is because teachers place emphasis on learning 'about' environment rather than action for the environment (Molapo, Stears & Dempster, 2014: 125). In addition, Larijani (2010: 123) found that majority of the teachers had moderate levels of EA and

teachers have bookish knowledge of EA (Bharambe, 2013: 9). Furthermore, Simsekli (2015: 226) asserts that learners' attention can be caught via practices that involve environmental problems they face or may face in their region.

The above-mentioned scholars explored different school practices. These studies were conducted in primary and secondary schools with learners and teachers. For instance, these studies explored EE practices on elementary learners' EA, formal environmental knowledge and everyday practices in secondary school, teachers' practice outdoor and their normal classroom practice in foundation phase, the effect of Eco-schools on learners, place-based education (PBE), status of EE, EA and sanitation, and level of awareness among primary school teachers. Though the study's findings differ from context to context, their focus was not to explore learners' EA towards littering or to conscientise learners on the litter issue. Therefore, this study shed some light in closing the gap by engaging co-researchers continuously to make use of EAR activities such as gardening, picking papers, installed litterbins, and other activities to raise their awareness towards littering within the school terrain.

3.6   LEARNERS' ENVIRONMENTAL AWARENESS TOWARDS LITTERING

Ifegbesan (2010: 201) found that secondary school learners were aware of waste problems on their school compounds, but possessed poor waste management practices. According to Ana et al. (2011: 24), their study reports that papers and plastics were the most frequently generated wastes around school campus. Furthermore, Msezane and Mudau (2014: 371) observed that littered items such as papers, plastics, and other waste material are owing to negligence. In addition, Ana et al. (2011: 24) conclude their study by stating that lack of litterbins might have contributed to waste spillages and the burning practices. Though lack of litterbins could be a factor causing learners to litter, however, Doan and Jablonski (2012) note that learners recognised

that the source of the trash on the ground and elsewhere in the school was because they placed it there.

Msezane and Mudau's (2014: 367) study aimed to establish whether learners in the school are practising what has been taught in extra-mural activities about EE. They report that learners continued to litter even after participation in EE as an extra-mural activities. This is in accordance with the study of Mutisya and Barker (2011) who found that most learners were aware of the key environmental issues in their local area and they understood the causes of some of these environmental issues. However, a majority of learners were not aware of the human activities polluting their water sources. Kärkkäinen, Haukipuro, Rummukainen, Keinonen, and Simola (2013: 35) analysed sixth graders' perceptions about environmental problems and their environmental responsibility. The learners highlighted littering as a national and global environmental problem. Moreover, they mentioned that the state of the environment could be improved if people personally avoided littering and picked up trash.

The scholars listed above conducted their studies with secondary school learners as well and focused on a particular aspect of littering at school and home compound. Their findings differ from one situation to another but what is common among them is that school littering continues to be a problem locally and globally. The scholars' findings confirm that no matter what type of EA education is offered to both teachers and learners, littering continues unabatedly. Little has been done to take the learners through EA using AR. Therefore, this study engaged learners in EAR activities through AR to promote hands-on environmental activities and raising their awareness. Learners were daily engaged in environmental activities to be conscious towards littering. Everyday learners were made aware of the consequences of littering towards their immediate environment within both their home and school.

3.7   ACTION RESEARCH AND ENVIRONMENT

Over past decades, research on young children concerning environment has gained interest and momentum across the globe (Tsevreni 2011; Cormell & Ivey 2012; Rioux & Pasquier, 2013; Katsenou, Flogaitis & Liarakou, 2015; Kara et al., 2015).

These studies were conducted in primary and secondary schools involving learners and some teachers. More importantly, these studies applied AR approach to sensitize learners about the environment. Modern children spend most of their time indoors, usually glued to some form of technology. As a result, they have little connection to the natural world (Cormell & Ivey, 2012: 38). This could perhaps further result in learners littering their immediate environment. Environment involves the surroundings, where we live and in which a range of development activities are performed for our life (Shilpy, 2012: 4).

Rioux and Pasquier (2013: 694) found that awareness-raising campaign has a great impact on stabilizing the children's behaviour than on the adoption of sustainable pro-environmental behaviour. Cormell and Ivey (2012: 38) report that learners gain a better understanding of the natural world through nature journaling. In addition, Kara et al. (2015: 61) state that providing children to develop eco-centric attitudes during early years of life has a crucial role for protection of the world and living creatures in it. Katsenou et al. (2015: 20) report that open, flexible, and two-way form of communication offered by AR gives learners the opportunity to practice in developing the competence of active participation. Tsevreni (2011: 64) found that the action model that evolved through the research proved to be a tool for children to develop their participatory capacities. However, Dyck (2012) suggests that there are barriers that limit and/or discourage people's participation in sustainable action. For instance, habit plays a role in taking part on environmental activities (Barr et al., 2011: 3019). In addition, knowledge transmission is not enough to change

habits linked with personal convenience, responsibility, desire to act, emotions, and lifestyle (Keramitsoglou & Tsagarakis, 2011: 842).

This study is an AR design, which explored the effects of home and school practices on learners' EA towards littering through EAR activities following cyclical process. In addition, the study contributes to knowledge on environmental pollution within the African context, specifically in South Africa because reviewed research above was conducted in European countries such as France, United States, Turkey, and Greece. Besides that, the above scholars are not hailing from South Africa even though they have conducted AR within EA. This study has added a component of a competition among learners per grade to encourage a habit change and clean lifestyle.

3.8 ACTION RESEARCH AND LITTERING

Hartley, Thompson and Pahl (2015: 214) examined children's baseline marine litter understanding, attitudes, and self-reported behaviours and intervention programme. Their study reveals that children recognised that marine litter is an important problem that has a negative impact on the environment, coastal industries and human health. A lack of litterbins, behaviour of businesses and the fishing industry, and too much packaging all contributed to marine litter. Silo's (2011: ii) findings reveal that participation of learners in waste management activities was largely teacher-directed because they wanted children to pick up litter as this was their primary EE concern. After the intervention programme, teacher-learner engagement changed. Other activities that had always caused tensions between learners and teachers were attended to. These include mobilising the maintenance of toilets, landscaping the school premises and even re-contextualising the litter management.

Long, Harré and Atkinson (2014: 471) demonstrate that friends' behaviour plays an important role in predicting change in an individual's littering and recycling behaviour over time. This is the results of other people's behaviour

and direct requests to put rubbish in the litterbin helped to shape immediate friends' waste behaviour, particularly around littering.

The above studies were conducted in primary and secondary schools with learners using different research designs such as survey, mixed method and case study. Scholars' studies focused on different aspect of littering in different context. Moreover, these studies were conducted in other countries such as Botswana, England and New Zealand. This further indicates that the study is partially investigated in South Africa or African context. This study utilised AR spiral activities to conscientise learners towards littering. Such AR spiral activities included EA campaign, celebrating environmental days and other activities. Moreover, the study explores the effects of home practices and school activities on learners' awareness towards littering behaviour.

3.9   ENVIRONMENT

The environment comprises the biophysical and human components (social, economic and political). In this study, an environment refers to biophysical surrounding of the home and school.

Learners need to understand the importance of the environment in their everyday lives. They need to understand how their actions affect the environment and how the environment affects them (Sethusha, 2006: 17) and how our environment is threatened owing to many hazards (Thote, 2013: 2). In daily life, we deal with many experiences and much information pertaining to both the poor state of the environment and the inadequate way in which humankind is dealing with it. It is increasingly evident that the quality of the environment is being degraded (Mnisi, 2011: 1) of which littering is a contributing factor and this being attributed to by human daily activities at home and school.

Some scholars argue that much of the environmental degradation that occurs today is primarily a result of failure of our society and educational systems to provide citizens with the basic understanding and skills needed to make informed choices about the interactions and interrelationships with the environment (Sethusha & Lumadi, 2013: 114). The environment is fragile and if we fail to educate our society, our actions towards environment will result in environmental degradation such as littering. According to Mbatha (2003: 26), too many people living in Gauteng Province stay in environments that are designed and demeaning to our humanity. Thokoza Township is a study site and it is located in Gauteng Province (see Chapter Four).

Subsequent two subsections discusses the role that home and school environments can play to help shape learners' awareness of their own environment. An environment can also be utilised as a special resource through which most learning can take place in order to help empower learners.

3.9.1 Home environment

Social-economic, political and biophysical factors may influence children's awareness on their environment in and outside the home environment. Therefore, it is crucial to bring the environment closer to home where people live (Conradie, 2003: 123) in order to understand some of the basic tenets that underlie this particular institution.

Home population includes family and extended members, and/or leaseholders. The appearance of home environment reflects the image of inhabitants. For instance, if you have a clean home then you are a clean person (Jackson-Tyree, 2012: 54). Perhaps keeping the home environment clean is influenced by the fact that people within their household (home) feel the sense of ownership; or by the feeling that an untidy home environment is mainly influenced by the home dwellers' own lack of the sense of self-care, of self-respect, and/or by personal laziness.

The interaction between factors in the child is maturing biology, his immediate family/community environment, and the societal landscape fuels and steers his development (Ryan, 2001: 1). In addition, families with a supportive environment will give opportunities to their children to learn and practice action skills (Abeliotis et al., 2010: 330).

Home and the school environment are known to play an important role in stimulating learners' awareness (Coertjens et al., 2010: 516). Children's environmental learning is closely associated with their *doing* of practical things in the home in relation to the everyday environmental problematic (Payne, 2005: 81). Nevertheless, it seems these environmental learning activities have a minimal impact on children as litter issue continues to be a topic of concern to date. Children discard garbage all over. Therefore, this study utilised home environment to engage children through AR spiral cycles on daily basis activities to raise their EA towards littering.

3.9.2 School environment

Learners use school surrounding to interact with each other on daily basis through various activities such as playing ovi (refer to 6.6.2.1). Environmental activities such as picking up papers could be utilised to conscientise and raise learners' EA towards littering and this could further improve their environmental knowledge.

Immediate environment reflects learners' awareness. A clean or untidy environment implicitly conveys the message about learners within the school. Therefore, immediate environment can be referred as a mirror. When a school is clean, people think that learners are learning and if the school is dirty, they think that the learners must be bad and are not learning a thing (Doan & Jablonski, 2012: 657). The authors' further states that the school environment affects the emotional status of teenagers and dirty environment could make

learners feel angry. Perhaps, learners' littering within the school is an expression of their emotions and feelings about the state of the school. Dirty environment encourages learners to litter and untidy environments portray a bad image of the school (Makonya, 2004: 15). Schools with a poor, unwelcoming climate promote neither attendance nor attachment, because people want to go to clean schools (Doan & Jablonski, 2012: 658). Most schools in South Africa use cleaning of the environment as a punishment for learners' misbehaviour hence the learners' have an attitude towards keeping their environment clean. The sooner this practice stops the more learners' EA activities will be taken seriously.

This study engaged learners in AR circular activities of observation, planning, action, and reflection of daily environmental activities to raise their awareness towards littering.

3.10 CONCLUSION

Home and school hands-on daily environmental activities and/or practices could be an answer to address litter issue if the activities are implemented through AR. I have defined and discussed littering from different context and the environment in this study for clarification. I reviewed a number of secondary sources such as articles, journals, periodicals, and dissertations globally to identify gaps within the researched topic. I examined this topic under different aspects such as littering; EA effects on home practices; EA effects on school practices; learners' EA towards littering; AR and environment; AR and littering and lastly environment. Therefore, I have discovered that the study was partially investigated. As an AR practitioner, I have started a journey with Grade 8 and 9 learners as participants toward EA at home and school compound. I want participants to believe this saying that points out, "Cleanliness is next to Godliness". Chapter Four describes study methodology employed in this study.

CHAPTER FOUR

STUDY METHODOLOGY

4.1 INTRODUCTION

This chapter describes the research methodology, methods and techniques employed in this study. The research instruments that are used in the data collection, data analysis and establishing legitimacy of the instrument are discussed. This study deals with littering as a negative social issue that detrimentally affects our environment. To understand the situation much better, I have applied an action research (AR) approach. The latter is normally associated with 'hands-on', small-scale research projects (Denscombe, 2007). I have used critical theory as involves co-researchers in real-life problems such as environmental issues. In this study, selected learners are referred as co-researchers. The following two subsections discuss both study site and data collection methods.

4.1.1 Study/research site location

Thokoza Township is a study site. The township is situated in Ekurhuleni East of Johannesburg in Gauteng Province, South Africa, with diverse communities. A diverse community refers to people from different cultural backgrounds. Out of nine provinces in South Africa, Gauteng Province is the one with better quality life and many opportunities. This township attracted more people from various provinces and neighbouring countries. It is close to industrial areas and modes of transport to workplaces are accessible at ease. Modes of transport include buses, taxis and locomotive train. This area is dominated by blacks (native Africans) of which majority of them speak isiZulu.

The township was established in 1973. The population in 2001 was 85,106 according to Census 2001 and in 2011 105,827 according to census 2011 (www.statssa). The population from 2001 has increased by 20,721. This

population increase is inevitably proportional to littering.

The area has five secondary and 12 primary schools as study sites. I selected one school owing to its close personal proximity and to avoid financial costs. Furthermore, one school was selected owing to the period of the study and research design. Research design has influenced me to use one secondary school because action research is a hands-on approach.

4.1.2 Data collection methods

The term 'methods' commonly denotes specific techniques, procedures, or tools used by me to generate and analyse data (Bloomberg & Volpe, 2012). I used observation schedules to observe daily activities, journal writing to record what was happening throughout the research journey, questionnaires to evaluate attitude, awareness, and perceptions, photos to capture the situation at the current instant and semi-structured interviews to get opinions and understanding. These instruments are used to generate knowledge through triangulation technique to establish legitimacy of the research findings. The ensuing section discusses research methodology.

4.2 RESEARCH METHODOLOGY

This study is grounded within environmental education (EE) field, which explored the effects of home and school practices on learners. Research methodology refers to a discipline concerned with studying the methods employed in carrying out some form of enquiry (Hammersley, 2011: 32).

4.2.1 RESEARCH DESIGN

Research design is the framework of the study that lays a structure for research instruments and other research techniques. It describes the procedures for conducting the study, including when, from whom, and under what conditions the data will be collected (McMillan & Schumacher, 2010: 20).

The subsequent subsections deal with research paradigm, qualitative approach and AR.

4.2.1.1 Research paradigms

This study is positioned within critical theory because the most important aspect of critical theory is emancipation. "Emancipation is formulated through a process of conscientisation within which the oppressed identify the contradictions that exist socially, politically and economically and engage and develop action against those oppressive elements that perpetuate their positioning and lived realities" (Tooley, 2000: 83). The intention of this study was to explore the influence of both the home and school institutions on learners' EA towards littering through action research (AR) and living inquiry. Critical theory assumes that theories, systems of knowledge and facts are embedded in and reflect relativist worldviews (Steffy & Grimes, 1986: 325). The qualitative research tradition of critical theory was chosen as a means of inquiry in this study because I believe in its efficacy in changing situations (Mapotse, 2015).

Critical theory is considered valid only if it meets the following three criteria:
- It must be explanatory, that is, explain what is wrong with current social reality.
- It must be practical, that is, identify the actors needed to change it.
- It must be normative, that is, provide both clear norms for criticism and achievable practical goals for social transformation (Horkheimer, 1972).

These three criteria emphasise that critical theory intent to transform the current situation. Critical theory transformed the situation by engaging co-researchers in environmental activities, which raised their awareness of littering at home and school. Further, co-researchers developed action competence to address littering at home and school. In turn, this will help

parents and teachers to learn how to contextualise resources at their disposal in order to raise co-researchers' awareness of littering. As such, resources such as waste materials were used to show parents and teachers about how to engage co-researchers in environmental activities.

4.2.1.2 Qualitative as a broad approach

I approached this study qualitatively in order to explore and understand the effects of home and school practices on learners' environmental awareness (EA) towards littering. In qualitative research, words are descriptive tools of the research instruments through transcriptions, jotting down observed events as they unfold naturally in the settings and processing questionnaires into Microsoft word and Excel program. On the other hand, quantitative research uses numbers to communicate their meaning. Nevertheless, numbers can never tell us what the information "means" or suggest actions to be taken (Stringer, 2007: 203). Qualitative research collects rich descriptive data in respect of a particular phenomenon or context with the intention of developing an understanding of what is being observed or studied (Nieuwenhuis, 2008).

There are different research design types that I can use but owing to the nature of this study, AR was applied. This study fits precisely into AR type. AR aims to understand the problem and propose solutions with the co-researchers. This study also falls into descriptive and exploratory study. The following subsection outlines AR approach.

4.2.1.3 Action Research as specific study approach

AR consists of two words, namely, action and research. McNiff (2013: 25) underscores that the 'action' of AR refers to what you do; and the 'research' of AR refers to how you find about what you do.

The main aim of AR is to generate knowledge that can lead to improve understanding and experience for social and environmental benefit (McNiff,

2013: 27). In addition, action researchers aim to transform the present to produce a different future (Carr & Kemmis, 1986: 183). Therefore, the current study intends to understand the effects of home practices and school educational processes in order to have concrete information about these institutions on learners' EA towards littering. The aftermath of the study will help all stakeholders to teach the society about littering and thus help inculcate literate society in the future.

AR is a cyclical process that takes shape as knowledge emerges. Cycles converge towards better situational understanding and improve action implementation, and are based in evaluative practice that alternates action and critical reflection (Koshy, 2005: 27). These cyclic processes ensure to address the problem until it is better and/or improved. Through the cyclic process, I will generate empirical evidence that addresses the research question. Because through cyclical process, I learn, I do, I reflect, I learn how to do better, I do it better, I learn from that, do it better, and so on (O'Leary, 2014: 169). This process emphasizes the cyclical nature of action – reflection, which is a core aspect of AR. One cycle transforms into the next, as learning informs action, and action informs new learning (in other words, practice generates new theory, and new theory feeds back into practice and generates new practices) (Whitehead & McNiff, 2006: 65).

Therefore, AR is a forth and backwards design because I plan, act, observe and reflect, and further I revise the plan, amend actions, observe and reflect. However, observation took place throughout the study.

AR is a living theory or lived experience (McAteer, 2013: 157). Through lived experiences, I generate new insight to contribute in the reviewed literature (see Chapter Three) on learners' EA effects on home and school practices towards littering. Knowledge is generated daily through interaction with parents/guardians, teachers, learners, administrators, ground staff,

volunteers, and community members. A distinctive feature of the living educational theory studies that I support is that practitioners both show how their learning influences new learning and new action, and also are able to stand back and offer their own critical commentaries as they go (Whitehead & McNiff, 2006: 118). Research methods are discussed in the next section.

4.2.2 RESEARCH METHODS

A research method refers to techniques that are applied within the study to gather data. I used multiple data collection to unpack the study. However, five instruments were considered for its relevance to the study. These instruments were applied in a sequential order. Co-researchers first completed the questionnaire (first and later followed by second set towards the end of the study), photos were taken at home and school and lastly semi-structured interviews were conducted with parents/guardian at home but observation and journal wring were conducted throughout the study simultaneously. Below I discuss research instruments.

4.2.2.1 Observations

Observation is the systematic process of recording the behavioural patterns of co-researchers, objects and occurrences without necessarily questioning or communicating with them (Nieuwenhuis, 2008: 83). It is a way for me to see and hear what is occurring naturally in the research site (McMillan & Schumacher, 2010: 350). However, the risk of observation by its nature is that it is highly selective and subjective (Nieuwenhuis, 2008).

Through observation process, I observed learners, teachers, administrators, grounds staff, volunteers and parents/guardians, and captured everything surrounding them such as cleaning, communication and other activities through journal writing and observation schedules (see Appendix 4.1 and 4.2). Subsequently through personal and lived experience, I made judgements. These judgements are based on my assumptions in order to have deeper

insight about the co-researchers and their behaviour towards littering. Experiences are fundamental to social science research as they constitute phenomena for inquiry (Sefotho, 2015: 30) and AR relies on observation and behavioural data (Cohen & Manion, 1994: 192). Consequently, this further adds to the issue of trustworthiness of the research results.

With observation, I was able to collect data continuously throughout the duration of data collection processes. It offered me some in-depth insight because observation had continued from completion of questionnaires, journal writing, conducting interviews, and taking photos and through daily activities. Observation provides first-hand information as it emerges and special kind of data that is not yet reported by any other source. In addition, accuracy of observed events could improve both the credibility and the trustworthiness of the collected data.

4.2.2.2 Journal writing

A journal is a tool to store reflective thoughts throughout the study. Writing in a journal throughout an AR study is a good way to record observations, ideas, challenges, successes, and failures (Cher, 2013: 36). A journal keeps record of all activities that are happening in school and at home at a particular time and a day. Journal keeps track of research journey and journal notes contain reflections, feelings and an interpretation of what it was like at the time. However, one of the things a research journal as a research technique cannot do is to record conversations (Mambinja, 2008: 35).

Field journals often supplement information obtained from other sources (Koshy, 2010: 91). This approach strengthens other instruments used in the study as it addresses the issue of trustworthy. In addition, it strengthens results gathered from triangulation method.

A research journal offered me a chance to move forth and backwards during reflections and preliminary data analysis. Summaries were made daily after the observation has taken place. Time was set aside to update the journal daily. This enabled me to track the progress of the study through the reflection moving back and forth between collected data. As a result, this allowed me and co-researchers to amend certain steps throughout the AR circles to address identified problems and then move to the next circle. Moreover, that provides an opportunity to fill in details and record my comments and insights (McMillan & Schumacher, 2010: 370).

4.2.2.3 Questionnaire

The questionnaire was piloted with learners that did not form part of the study. In the process, few issues were identified such as language barrier, limited number of options, and ambiguity of words. Therefore, the questionnaire was adapted to suit learners' vocabulary capability. I sought assistance from an expert to design and analyse the questionnaire.

I used a questionnaire because it is able to collect unique data that addresses the problem (details in Appendix 4.3). The use of questionnaire was based on the assumption that co-researchers will provide truthful answers and are used to obtain information on awareness, knowledge, attitudes, values, judgement and behaviour, which are important in EA and education (Komane, 2005: 50). In addition, the questionnaire simplifies the state of data analysis (Ocansey, 2006: 41).

The questionnaire used closed-ended questions. Because data collected from the administration of closed-ended questions are easier to analyse than data collected from open-ended questions (Maree & Pietersen, 2008: 161; Koshy, 2010: 83). Open-ended questions pose a real challenge to our research assistant at the time of analysis (Koshy, 2010: 83). In addition, closed-ended questions are legible, easy to tabulate, analyse and less open to

misinterpretation (Komane, 2005: 48). However, closed questions limit co-researchers to express their thoughts as they choose answers from options availed to them, which probably leads to bias.

The questionnaire has both advantages and disadvantages. The main advantage of questionnaire is that during the completion process, ambiguous words can be explained to the co-researchers immediately. Clarity of ambiguous words could further produce accuracy of results or could lead to confusion/misunderstanding. Further disadvantage could include complicated instructions that discourage response (Stimpson, 1996: 125).

4.2.2.4 Photographs

Photograph is a graphic element of static object. Two sets of photographs were taken from the school and from the co-researchers' homes. One set was taken at the beginning of the study and another one at the end of the study. These photographs were taken in order to look the situation before and after the interventions have taken place. Visual material provides a form of 'thick description' (Spencer, 2011: 33).

Photographs can contribute to the production of comparable data in the research process (Attané, 2011: 189). More, importantly, they provide a useful record, enabling later audiences to more clearly visualise settings and events (Stringer, 2008: 72). Photographs can enable readers to retrace my conclusions, coupling with other sources.

However, photographs are biased in nature. Individuals interpret photographs in different ways according to their personal experience and understanding (Spencely, 2012: 197). Analyses of these photographs were based on the objectives and aim of the study, which therefore might overshadow the meaning of the photographs as individual perceptions always differ.

Photographs do not necessarily provide agreed information. Instead, they simply present data for interpretation and it is only when combined with language in the form of discussions or interviews that their true value and significance are discovered (Spencely, 2012: 204). The true meaning of the photograph is revealed by a means of triangulating data collection methods. These triangulated data method could further reveal hidden information from the photographs. Photographs have powerful meaning compared to other research instruments. Probably, most people can be able to read information displayed on the photo. This instrument communicates their meanings through visual representation. The visual representation communicates the message clearly than numerical values and words.

4.2.2.5 Semi-structured interview

An interview is a dialogue conversation between two or more people. Dialogue conversation includes me asking parents/guardians questions and parents/guardians answering the questions. The aim was to explore their views, perceptions and other behavioural thoughts. This instrument was used in the study to collect data through individual semi-structured interview (see Appendix 4.4). An interview can be referred as the joint exploration of the actual experience of the phenomenon (Williams, 1996: 18). As dictates by living paradigm to explore lived experiences of co-researchers at home and school to understand littering in their context.

Using a semi-structured interview is a good way to make sure that questions important to me are answered while providing participants with an opportunity to add other useful information (Cher, 2013: 110) and can often put flesh on the bones of questionnaire responses (Bell, 2010: 161). Even so, an interview provides factual, fictional, contradictory data, and other elements. During an interview process, observations were made of parents/guardians providing information that was fictional and contradictory compared to what was happening within their yard.

The interview provided me with information that I could not get it anywhere; which also provides unexpected but useful perspective (Koshy, 2005: 93). Unexpected outcomes could result from follow-up questions as the interview process unfolds. Furthermore, if the interviewee trusts and feels comfortable around the interviewer he or she will be likely to provide rich information. Data collected from the interviews are rare to find in secondary sources but similarity can be identified.

However, I did not consider using structured interview as it is frequently used in multiple case studies or larger sample groups to ensure consistency. The rationale for this is that if the questions are overly structured they inhibit probing (Nieuwenhuis, 2008: 87).

A digital recorder and the cell phone were used to record the interviews to enable me to transcribe, analyse and interpret the results without missing the information that has been provided by parents/guardians. A recorder and cell phone were used as backups in case one device malfunctioned to limit any chances data loss as provided by parents/guardians. Digital recorders have advantages over the older analogue recorders in that they store data in a digital format that can be downloaded as a sound file directly into the computer, making it easier to manage, store, and transcribe interviews than when dealing with boxes of cassettes (Glesne, 2011). For that reason, transcribed data was entered into Microsoft word and Excel program. I had transcribed the interview(s) to later retrieve and extract data for credibility and trustworthiness of the results. The interviews also formed part of data collection as a primary source that would contribute to the existing literature. An interview is a powerful tool to collect rich data. However, an interview has its own disadvantages particularly such as when conducting interviews. Moreover, transcription requires more time, language barrier, recorder intimidates participants, interviewer presence may make interviewee(s) nervous and bias

any responses and participants may tell me what they think I want to hear (Koshy, 2010: 88).

Overall, the interview questions were based in English but due to language barrier issues, some questions were translated into two other African languages such as isiZulu and Sesotho. Translation means converting a language text into another language. The main aim of language translation was merely to accommodate all participants. Hence, I sought the help of professionals to translate the English questions version into these aforementioned African languages. This was done in order to make parents/guardians feel comfortable when answering interview questions. Nevertheless, the Sesotho version was translated during the process of conducting the interviews (see chapter five). I later discovered that the majority of parents/guardians speak Sesotho. The succeeding section deals with research techniques used in the study.

4.3 RESEARCH TECHNIQUES

This section discusses population and sample, ethical considerations, and data analysis.

4.3.1 Population and sample

Population and sample have different connotations. Therefore, it is important to clarify this concept in this context. Population refers to the group under the study and sample refers to small group of the whole population. Qualitative sampling is done to increase the utility of information obtained from small samples (McMillan & Schumacher, 2010: 326). A sample was determined out of group of volunteers of learner population per class. I selected two learners out of seven classes irrespective of their age and other factors randomly (convenience sampling) to have manageable population. The sample comprised learners from Grade 8 only. In addition, the South Africa education system underwent new curriculum transformation, which is known as Curriculum and

Assessment Policy Statement (CAPS). In 2015, Grade 8 learners were on their second year of newly implemented curriculum. I used Microsoft Excel program and applied randbetween function to select learners randomly according to the numbers assigned to them. Parents/guardians of selected learners are automatically selected for this study.

Convenience random sampling was used to select learners and each participant had an equal chance of being selected or chosen. This type of sampling makes it easier to conduct the research because group of participants are selected based on being accessible (McMillan & Schumacher, 2010: 137).

The Grade 8A class had 46 learners, 8B 50, 8C 44, 8D 46, 8E 45, 8F 45 and 8G 44. These classes are divided according to their linguistic differences, namely, isiZulu and Sesotho. Grade 8A, B, and C are Sesotho classes and Grade 8D, E, F while G are isiZulu classes. I requested class list from the office and the list contained names, surnames and administration or identity number of each learner. They were numbered according to the number of learners in the classroom.

I assigned numbers to the learners who volunteered to be part of the study for selection. On the list, each population element has to be numbered sequentially such that each element can uniquely be identified (Maree & Pietersen, 2008: 172).

The study had 14 co-researchers in total in order to have a manageable population system that will enable some thorough investigation. Parents/guardians of the selected co-researchers formed part of the study and were notified about home visits as I was assessing their home environment.

4.3.2 Ethical considerations

Ethics can be defined as set of rules that have guided me throughout the study. Ethics rules in AR entails respect, honesty, power, voluntarism, anonymity, harmless, teamwork, and freedom, informed consent, assent letter for minor participants, values of democracy, confidentiality, privacy, and permission (Somekh, 2006: 47). Several guidelines have been put into place to ensure that co-researchers are not harmed or deceived. Moreover, they have been informed regarding what participation entails, that they have agreed to participate, and that they have been assured that the confidentiality of their responses and their participation will be maintained (Cher, 2013: 81). This study was based on voluntary participation and the co-researcher(s) could withdraw at any time during the research/study process if he/she felt like to quitting and no incentive would be given. 'Voluntarism' entails applying the principle of informed consent and therefore of ensuring that participants could freely choose to take part (or not) in the research and guarantees that exposure to risks is undertaken knowingly and voluntarily (Cohen & Manion, 1994: 350).

Pseudonyms were used whereby school name was deliberately changed to Hunadi* and names of co-researchers were also changed to different names of colours, for anonymity and confidentiality assurance. Names of colours assigned to co-researchers were meant to hide their identity. The pseudonym names are assigned for identification of data analysis.

I wrote a letter to the GDE to seek permission to conduct the study. A letter was forwarded to the School Principal and School Governing Body (SGB) to seek permission to conduct study within the school. I also sought ethical clearance (see Appendix 1.4) from University of South Africa (Unisa) before the study can be conducted to ensure that privacy and rights of all the co-researchers are protected. In addition, the Higher Education Institution had also ethically cleared my study and the certificate is in the Appendix 1.6. Furthermore, I have arranged a meeting with the School Management Team

(SMT) and Grade 8 class managers to discuss the purpose of the study. This was done to emphasise the ethical rules and ensure members are aware of terms of the study in order not to feel uncomfortable when they see me. However, the meeting did not materialise. Instead, class managers received letters informing them about the study.

A letter requesting permission to observe at home was forwarded to the parents/guardians to ensure (and also assure them of their) privacy and anonymity. I wrote a consent form and assent letter informing parents/guardians about the participation of their children in the study. Parents/guardians signed consent form and the assent letter signed by a child as indication that he/she will be willing to take part in the study. In addition to a consent, the letter clearly stated that confidentiality should be maintained throughout including the fact that there will be no prejudice in the event whereby the co-researchers are unwilling or reluctant to participate in the study or withdraw their own participation thereof.

4.3.3 Data analysis

Analysis means to break data down into its component parts so that it can be understood (Johnson, 2012: 91). It is important to break data into smaller pieces in order to manage the data analysis process. These pieces can also help the reader to understand the whole.

Qualitative data analysis is mainly an inductive process of arranging data into categories and identifying patterns and relationships among the categories (McMillan & Schumacher, 2010). Qualitative data analysis is naturally inductive and not deductive. On the other hand, the process of data analysis is both inductive (experience/coding) and deductive (literature review) (Bloomberg & Volpe, 2012: 110). McMillan and Schumacher (2010: 367), inductive analysis is the process through which qualitative researchers synthesize and make meaning from the data, starting with specific data and ending with categories

and patterns. In this way, more general themes and conclusions emerge from the data rather than being imposed prior to data collection (McMillan & Schumacher, 2010).

The analysis of data is an ongoing process that should occur throughout the study rather than at the end of it (Cher, 2013: 137). A preliminary data analysis was conducted throughout the study in order to move back and forth between collected data and to track the progress of the study. This sought to review if the collected data is addressing the aim and objectives, and research questions. Piling up data increases workload at the end and might cause frustrations. Throughout the research process, I used observation schedules by incorporating journal writing to record my reflections as a way of doing preliminary data analysis in order to move back and forth.

Microsoft Word program forms part of the data analysis because I had incorporated (typed) transcribed data from questionnaires, verbatim words, photographs, observed events, journal writing and interviews responses into the program using tables. A Microsoft Excel also formed part of data analysis, to analyse and interpret the data collected from journal writing, interviews and observed events which I applied formulae/functions and diagrams/figures to make sense of data and themes emerged and categorised as discussed on Chapter Six. Tables and total score percentages are applied to analyse questions from a questionnaire, observed events, journal, and the responses from parents/guardians interviews.

Utilisations of photos demonstrated the situation before and after programme of interventions had been effected. The programme is presented in Chapter Five under section 5.7. In this study, I have labelled and numbered photos as part of data analyses. Photos were put side by side displaying different scenarios. Figure 4.1 list some of the questions that helped me to analyse photos:
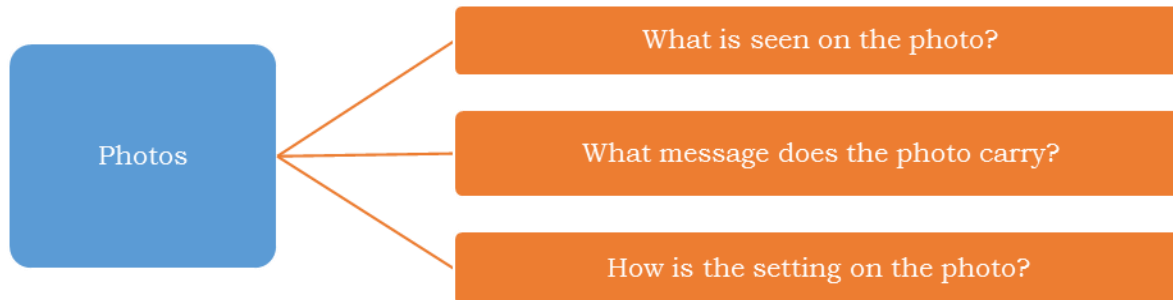
Figure 4.1: Analysis of the photos

In addition, I have used tables to outline details of data collection such as dates of collection etc. The statistician who helped me to design the data collection instruments also helped in professional analysis of data.

4.4 ESTABLISHING LEGITIMACY OF THE RESEARCH FINDINGS

During data collection process, I addressed credibility, transferability, dependability, and conformability to improve trustworthiness of the collected data. Collected data should be the same or similar if another author conducts same study in a different context using same instruments anticipate replicating same results. Data legitimacy refers to soundness of the collected data in the study.

4.4.1 Trustworthiness

Qualitative research is trustworthy when it accurately represents the experience of the study co-researchers (Teane, 2007: 44). In this study, living paradigm was used to explore co-researchers experiences comprising activities, communications, slang language used and other experiences. I was observing co-researchers using observation schedules, capturing photos of the co-researchers' homes and school, same questions of two sets of questionnaire

were completed by the co-researchers while the parents/guardians answered the similar questions during the interviews to ensure trustworthiness. I know the kind of contributions that can be made to new practices and new theories through the production of co-researchers' accounts as they create their living theories of practice (Whitehead & McNiff, 2006: 19).

Trustworthiness is established by recording and reviewing the research procedures themselves to establish the extent to which they ensure that the phenomena studied are accurately and adequately represented (Stringer, 2008: 48).

Data collected from observations, journal writing, photos, interviews, and questionnaires are triangulated to compare and unpack commonalities and differences to ensure that results are trustworthy. It is generally accepted that engaging multiple methods of data collection, such as observation, interviews and questionnaires, will lead to trustworthiness (Nieuwenhuis, 2008: 80). The study supervisor as well as internal and external examiners will also serve as a critical reader to assess and critique my work.

4.4.1.1 Credibility

Credibility in AR means trustworthy or capable of being believed. This enables me and others to use my data with confidence (Johnson, 2012). The credibility of a study was enhanced to the extent that I can demonstrate that outcomes of the study have a direct relationship to the terminology, lived experiences and language used by co-researchers (Stringer, 2008). It is important to share the context of the study site and activities that happened within the site as discussed and demonstrated in Chapter Five and Six. Identifying and documenting such improve the credibility of the study.

Credibility can be established through triangulation. The latter refers to a process in which multiple forms of data are collected and analysed (Cher,

2013: 89). Moreover, spending more time on the field observing co-researchers will reveal hidden behavioural patterns; and using journal writing to reflect on the observed events will ensure integrity of the research findings. It is therefore the task of the critical researcher to disclose the hidden ideologies assumptions within society and to critique them (Nieuwenhuis, 2008: 62)

4.4.1.2 Transferability

Transferability refers to generalisation of research findings that can fit into other research sites. For instance, a detailed description of the study could perhaps contribute to transferability if situations are similar. Providing thick detailed descriptions [can] contribute to the trustworthiness of a study by enabling other audiences to clearly understand the nature of the context and the people participating in the study (Stringer, 2008: 50). However, experiences of particular group being studied may not necessarily relate to others and hence conclusions may not be transferable. This study is a case study that uses AR to explore the implications of home practice and school activities on learners' EA towards littering. Therefore, the research findings will apply within the studied institution or context. Convenience sampling was used in the study to select co-researchers.

4.4.1.3 Dependability

Teane (2007: 45) states that it is the stability of data over time and is obtained with stepwise replication and inquiry audit. Dependability criterion relates to the consistency of the findings. This means that if the study is repeated in a similar context with the same co-researchers, the findings would be consistent. Moreover, code-recoding procedure was conducted in the study and followed by triangulation method in all data collection instruments in order to reveal hidden ideas in between data and to address the legitimacy of the research findings. The coding process was continuously conducted throughout the study in all research instruments and themes emerged as discussed on Chapter Five and Six.

4.4.1.4 Confirmability

Confirmability is also referred to as 'audit ability' whereby an external auditor attempts to follow through the natural history or progression of events in a project to try to understand how and why decisions were made (Teane, 2007: 45). This means that dots are recollected through AR cycles to complete the puzzle through triangulation method in order to confirm and conclude the study. Re-collection of dots through AR cycles is a confirmability audit trail. Some theories are generated through research, and through co-researchers experiences of living and discourse narrative (Whitehead & McNiff, 2006). The ensuing section explains the process of triangulation of data sources.

4.5 TRIANGULATION OF DATA SOURCES

In AR triangulation is achieved by collecting different types of data, using different data sources, collecting data at different times, and having other people review your data to check for accuracy and adjust your findings (Johnson, 2012: 93). The aim of triangulation is to ensure that instruments complement each other. Therefore, when multiple data sources are triangulated and point to the same result, confidence about the accuracy of the result of the study is increased (Cher, 2013: 168). Triangulating multiple sources improves research findings and further eliminates errors and bias of collected data. Research instruments stated before in this study were considered because of their relevance to the study. I applied these instruments to qualify and quantify collected data.

4.6 DATA ANALYSIS

Analysing data is quite challenging and requires skills to carry out such activity.

4.6.1 Research process as develop

Figure 4.2 below depicts connection of the research process. This figure serves to indicate that this study was conducted as a three-way process. I was the researcher and also served as participant-facilitator working with the co-researchers to raise their awareness towards litter issue at home and school. My role was to provide guidance and engage in AR activities. As co-researchers at home and school, learners were at the centre throughout the research journey. Co-researchers also shared ideas with me and suggested solutions on how to beautify the school and home. Their roles were to point out issues of concern and provide solutions. In addition, their parents/guardians also served as coordinators. Their role was to help emphasise to co-researchers information gained at school to be sustained at home and teach their children about cleanliness daily. This process was cyclic in nature intending to explore effects of home and school practices on learners' EA towards littering.
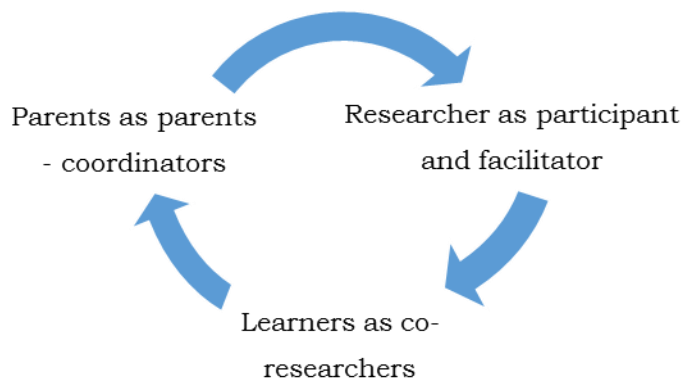
Figure 4.2: Research process adapted from Katsenou, Flogaitis & Liarakou, 2015

4.6.2 How the relationship formed throughout the study

Figure 4.3 below shows the relationship I had with co-researchers and parents/guardians. At the beginning of the study, co-researchers saw me as their teacher and outsider within their lifestyle. As the study progresses and we had started to engage in throughout the meetings/activities, their perceptions about me being a teacher started to change. This was evident after we had

several meetings/activities. Co-researchers started to comment and voice out their concerns about the appearance of the school. Some whenever they have ideas will come to me or send text on our group chat on WhatsApp (an interactive social media platform) and discuss but shelve it for our scheduled meetings/activities with other co-researchers.

The teacher relationship turned into teacher-father as co-researchers felt freely to discuss certain things with me concerning the study and their life at home and school. For instance, some will come and ask for food and tea when it is cold or warm their hands on the heater.

In addition, teacher-father relationship culminated into teacher-community member. Co-researchers and their peers would come to my computer laboratory (lab) to clean the lab and request to play computer games in the lab. Parents/guardians were happy to see their children engaged in environmental action research (EAR) activities and others shared seeds and seedlings with us. Parents/guardians at home will want to know how their child is performing at school. I was constantly communicating with parents/guardians via phone call every time I have meetings/activities with co-researchers. This was to ensure that co-researchers were arriving safely at their respective homes as well as on time and to help keep and maintain good working relationships with the parents/guardians.
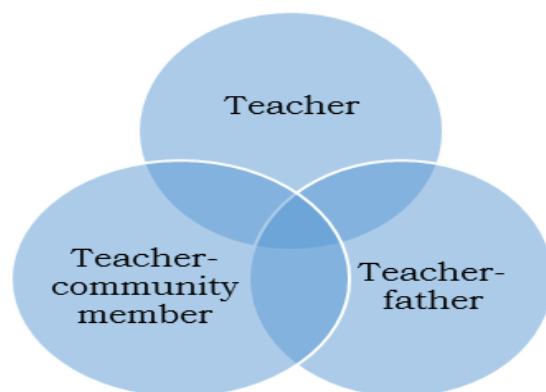
Figure 4.3: Establishing relationship

4.7 ACTION RESEARCH CONTINUOUS LEARNING CIRCLE

Continuous learning circle refers to the construction of knowledge through cyclical research process that includes planning, acting, observation and reflection; and revised plan, amended actions, observation and reflection. The AR cycles unfold in real time and begin with seeking an understanding of the context of the project (Coghlan & Brannick, 2010: 8). As AR circles unfold collaboratively with co-researchers, we planned activities and implemented interventions programme that intended to reduce littering at school and home. While AR cycles unfold, hidden problems are discovered and proposed strategies are implemented. We reflected throughout the AR circles to record the progress and challenges of the study.

I used continuous learning cycles throughout cyclical AR process. However, observation forms part of AR cycles but I did not include observation under the cycles because I was observing co-researchers throughout the study. This is because I was observing during both the action and reflection phases. In the action phase, I observed litter pick up activities and recorded these in my journal. I was also observing during the reflection phase when I looked at photographs taken at home and school (Mambinja, 2008: 32). Figure 4.4 below shows EAR activities that we embarked on throughout the research journey.

Plan

Reflect

Act

Observation

Term One
- School Environmental Policy
- Vegetable Garden
- Copies of environmental calendar distributed
- Copies of school environmental policy distributed to teachers
- litter pick up duty roster
- environmental campaign

Term Two
- Litterbins installed
- Celebrating Earth day
- School registered as Eco-school
- Paint litterbins
- Installing boards naming plants

Term Three
- Class competition
- Drawing litterbins
- Crotcheting
- Making manure from waste material
- Celebrating Arbor day
- Emblems attached on school walls

Figure 4.4: Action research cyclic spiral

4.8 ASSUMPTION CLAIMING KNOWLEDGE WITHIN THE STUDY

In this study, AR is viewed under the assumption that it is a methodology. This assumption laid a foundation for the study. I make claims about the process for studying knowledge (methodology) (Bloomberg & Volpe, 2012: 28).

Methodological assumption that underpins the methods such as observation schedules, photos, journal writing, semi-structured interviews, and questionnaires were conducted to collect the data from the co-researchers and their parents/guardians. These methods drove the study to answer the research questions, and aim and objectives. As a result, I claim the knowledge generated through personal and lived experiences. The voices of co-researchers guided this journey through my practice, presenting evidence (Whitehead & McNiff, 2006). Therefore, AR is a methodology, a way of understanding and generating knowledge about the complexities of practice (McAteer, 2013: 21).

4.9 CONCLUSION

In this chapter, I have described the research methodology, methods and techniques. Legitimacy of establishing research findings were outlined to ensure the integrity of the findings. In addition, triangulations of sources were discussed to address any errors and bias that might arise from the research instruments. The approach of the study that is AR was elaborated. AR continuous learning circles are highlighted in the study. However, these circles will be discussed in detail in Chapter Six.

Chapter 5 discusses the context of the study.

CHAPTER FIVE

CONTEXTUALISING THE RESEARCH JOURNEY

5.1 INTRODUCTION

This chapter outlines the background of the study, including school context, families' case studied and their photos, interviews techniques, challenges, and the reflections. Moreover, this chapter presents programme engaging co-researchers at school including term one. These sections form part of data collection, analysis and discussions.

5.2 SCHOOL CONTEXT

This section provides research site background.

5.2.1 School type

The school is a comprehensive secondary school and public institution, accepting learners from Grade 8 to 12. According to section 21 schools, it means it is a no fee paying school and falls within quintile three. Quintile refers to equal groups clustered together for distribution of resources among schools according to their socio-economic factors (Spaull, 2013). Hence, the school has shortages of litterbins in and outside classrooms that could have contributed to littering.

5.2.2 School governance

The School Governing Body (SGB), School Management Team (SMT) and Representative Council of Learners (RCL) serve as both governance and management in leading the school activities. The SGB component includes six parents (chairperson and the deputy; treasurer and three additional members), one ex-officio (principal), three teachers (secretary, and the deputy and one member), three RCL Members (president, the deputy and treasurer) and one non-teaching staff. In total, the school governance encompasses 14 members.

The SMT comprises one principal, two deputies General Education and Training (GET) and Further Education and Training (FET), and nine HoDs. In addition, the school has three admin clerks, 43 post-level one teachers, three cleaners, four grounds men, six food handlers, and six volunteering cleaners. The school governance seemed not translate their well establish governance into turning the school to be litter free zone. Since the school has cleaners and volunteers, this could have influenced learners' littering behaviour in the school. In other studies, conducted learners revealed that the reason they littered was that the school had hired someone to collect litter and keep the place clean (Ajaegbo et al., 2012; Mbatha, 2003; Msezane, 2014). In this study, some of the learners have proclaimed that the school has hired cleaners and has volunteers to keep the school campus clean and others stated that they are not involved in cleaning at home.

5.2.3 School's history

The school started in 1983 but it was housed in two primary schools. Standard six (it is now referred as Grade 8 after curriculum transformation in 1994) learners were taken from Tseko* Secondary School which was the only secondary school in Thokoza to the respective primary schools. In 1985, the school moved to a new building. Since the school was established, four principals had headed it. The first was a black male from 1983-1985, succeeded by white male in a period from 1986-1993 then a black woman from 1994-2013 and the current being a black male from 2014 to date. The history of the school shows that males dominated leadership position. I joined this institution in 2011 and learners' littering behaviour appeared not to change. This could suggest that leadership in the school could have contributed to the learners littering behaviour.

5.2.4 Vision and mission statement

The vision of the school posits that "as one, we aim to do our best in producing the child that is responsible, efficient, accountable, acceptable to the community and marketable or economically prepared". Then again, mission statement postulates that "the development of democratic, excellent public scholarship system that is accessible to all and provides opportunities of learning and teaching through quality educational practice supported by necessary resources thus ensuring learners to enter the careers of their choice and responsible citizens of society". Although the school has vision and mission statement stating the general aim of the school, it is silent on litter issue and in all environmental aspects. School ethos do not promote or intend to address littering hence learners littering behaviour do not change.

5.2.5 Partnerships

The school has a number of support structures for curriculum delivery and learners' population. Samsung assists learners who enrolled for Electrical Engineering from Grade 10 to 12. Some of the learners who have done well in Grade 12 are placed at Samsung for employment. Another partnership the school had was Joy Global, which assisted the school with Mechanical Technology, and they donated a cut away car for practical. However, owing to the decline in numbers of learners enrolled in Mathematics and Science in the school and poor results in the school, they have withdrawn their sponsorship.

The school has housed a Non-Governmental Organisation (NGO) named Setshabelo, which takes care of AIDS orphans and poor children from both primary and secondary schools around Thokoza. The school also houses a Cell C tower in the premises that also thus bring monthly income in the school coffers to assist the school in their financial needs.

These sponsors have influence on learners' performance. Nevertheless, none of these sponsors in the school attempts to raise learners' awareness of littering. Perhaps their attempts to address littering could yield positive results.

5.2.6 Feeding scheme

The school has a feeding scheme for learners from Grade 8 to 12. Learners are fed in the morning with soft porridge and again during lunch with different meal on the day. In addition, Grade 12 learners are fed again after school owing to afternoon classes from Monday to Thursday in preparation for their exams. Therefore, food handlers prepare breakfast, lunch and super daily. As a result, learners drop food remains on the ground, which thus litter the school ground.

5.2.7 Curriculum

The school does offer various subjects such as commercial, sciences, services and technology streams. These streams are structured per Grade level. GET band consists of Grade 8 to 9 and offers compulsory subjects. These compulsory subjects include Creative Arts (CA), Economic and Management Sciences (EMS), English First Additional Language (ENGFAL), two home languages (IsiZulu and Sesotho), Life Orientation (LO), Mathematics (Maths), Natural Sciences (NS), Social Sciences (SS), and Technology. GET band learners study nine subjects.

In Grade 10 to 12 home language, English, LO, and religious studies are compulsory but learners can be able to choose streams. These streams are divided into four, namely, commercial, services, sciences, and technical. Commercial stream consist of Accounting (ACC), Business Studies (BS), Economics, and Maths. Services stream learners have three choices. First choice includes Computer Applications Technology (CAT)/ Geography (Geo), Consumer Studies (CS), Mathematical Literacy (Maths Lit), and Tourism.

Second choice is that of CAT/ Design, Geo, Maths Lit and Tourism. Third choice consists of CAT, Design, Geo and Maths Lit.

Sciences stream include Geo, Life Sciences, Maths, and Physical Sciences. Lastly, technical stream consists of Engineering Graphics and Design (EGD), Electrical Engineering/Mechanical Engineering, Technical Maths, and Technical Sciences. Learners in FET band study eight subjects.

Both GET and FET bands with reference to their subjects appear to contribute very little in addressing and raising learners' awareness towards littering as litter continues to be a problem in the school. Mbatha (2003: 40) reiterates that some subjects were contributing very little or nothing towards keeping the environment clean. Teachers are deployed outside of their areas of specialisation (Maluleke, 2015; Sehlola, 2007).

5.2.8 Sport activities

In the past, the school was very active in different sporting codes such as netball, soccer, volleyball, and athletics. Nevertheless, since 2014 under new management the school disengaged from all sporting activities. One of the reasons from principal's office for school to disengage was to focus on curriculum owing to poor performance of the school. Consequently, learners during breaks use litterbins as goal poles and this seems to indicate that learners do not know the purpose of litterbins (This fact is more unpacked in Chapter Six under 6.6.2.1).

5.2.9 School facilities

There are 35 classrooms in the school. In addition, the school has two mobile classrooms that are unoccupied. One administration block and the library are situated within the same building. Nine HoDs offices are shared with teachers within their respective departments and five vacant offices. There is also one feeding scheme kitchen and two computer centres. One lab, which was

serviced by Gauteng Online (GOL), has 26 thin client computers in the centre. Another computer lab has 50 computers maintained by the schoolteacher.

In addition, the school has five workshops, which cater EGD, Design, Plumbing, Electrical, and Mechanical Engineering. On the other hand, Science Department has four laboratories, which are divided into two, namely, each for Physical Sciences and Life Sciences. The school further has one home economic centre (consumer studies). Within the school premises, there is also caretaker residence, school tuck-shop and two storerooms for equipment. There is also one resting room for grounds men and volunteers.

As a result, learners use obscured parts of these buildings as hideaways for smoking and drop cigarette butts on the ground, which contributes to littering. However, there is visibility of papers and other items within the schoolyard.

5.2.10 Teachers profile

The school has 55 teachers in total. Large portion of the teachers' population are female which is about 59%. Quite a number of teachers are born in 1970. In addition, the average age of the teachers is 42. Teachers' qualifications vary from National Professional Diploma for Educators (NPDE), Bachelor of Education (B.Ed.) and other qualifications. This large population of teachers are not engaged in any litter pick up or environmental activities. As a result, this could have influenced learners to litter since majority of teachers do not demonstrate good environmental friendly practices. Makonya (2004: 54) corroborates that the lack of litter pick up supervision by teachers contribute to the untidy environment in schools.

5.2.11 Learner population

The learner capacity of the school was 1 200 when it first started. Learner population varies each year. Nevertheless, in 2015 learner population has increased drastically compared to other years especially Grade 8's. The total

population of learners in the school adds up to 1 274. Furthermore, the total number of learners in 2016 has increased to 1 318 which has increased slightly by 44 (3.3%) compared to 2015. This increase most likely did not change learners' littering behaviour. Instead overburdened school infrastructure such as shortages of litterbins, chairs and tables were vandalised by learners, consequently caused littering. The next section details the context of the families placed under the case study.

5.3 FAMILIES CASE STUDIED

Out of seven families, three families participated in a case study (5.6.2.1 explain this further). I visited these families twice per month for a period of nine months. Three co-researchers, one boy and two girls were engaged in EAR activities at home. These co-researchers were aged between 12 and 14 years. The three families that were used as a case study were named Navy – Blue Family, Tan Family and Maroon Family. These families are named after the colours to conceal their identity. First, I will outline the interview schedule of these families.

Table 5.1: Families case studied interview schedule

FAMILY	INTERVIEW DATE	INTERVIEW TIME	INTERVIEW RESPONDENT	INTERVIEW DURATION
Navy-Blue	27/10/2015	17h05	Mother	12 minutes 58 seconds
Tan	28/10/2015	15h40	Mother	Seven minutes 21 seconds
Maroon	21/11/2015	12h10	Grandmother	14 minutes eight seconds

5.3.1 Navy-Blue*

The family is headed by a grandmother and speaks Sesotho. The co-researcher stays with her mother and seven family members including grandmother, uncle, three aunts and four siblings. The co-researcher is 14 years old and the mother is 40 years old, and she is unemployed. In this table below, I present respondent interview questions and response.

Table 5.2: Navy-Blue family transcript seven

Interviewers' Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influences your child's actions not to litter?	**Interviewee**: This is a difficult one, especially with the younger kids. It is better with the older ones because you tell them to pick up litter and to clean and they listen. However, the younger ones need constant reminder and supervision.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I pick them up and throw in the litterbin.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: I tell her how to dust off, wash dishes too because there is washing powder and dishwashing liquid so I tell her to use liquid.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: There is one litterbin in the house and two outside. Nevertheless, I stay in the backroom where there is no litterbin.

5.3.1.1 Navy-Blue family interview summary

Unwanted items are picked on the ground and thrown inside the bin. This shows positive environmental behaviour towards the environment. In addition, they have sufficient bins in and outside the house for family members to throw in their garbage. Furthermore, communication and supervision are used to engage the co-researcher. Despite that, their practice has slight effect to influence co-researchers towards littering with reference to the photo on 5.1A. Nonetheless, if the co-researcher is frequently engaged in EAR activity, it will yield positive results towards cleanliness as shown on photo 5.1B.

5.3.2 Tan[*]

The family involved in this case study is headed by a mother and speaks IsiZulu. The co-researcher stays with the family, which includes the mother and three siblings. The mother is 50 years old and co-researcher is 12 years old. This table details respondent interview questions and response.

Table 5.3: Tan family transcript eight

Interviewers' Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influences your child's actions not to litter?	**Interviewee**: Children of today do not listen even when you teach them. I have my kids and I wake them up, take out night urine bowl and open the windows to let in fresh air. Before one eats, they must wash their hands, faces and brush their teeth. Yet, as I said children do not listen though I keep on telling them. They like playing. They cannot even notice when one is serious because they are no longer beaten like us in our days.
Interviewer: When you see	**Interviewee**: I pick up litter.

plastic, papers and other unwanted items on the ground, what do you do?	
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: I sit him down because sometime when I get back from night shift I find the house disorganised because you know children like freedom. I wake them up and monitor them as they put the house back in order.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: I have two outside and one in the house.

5.3.2.1 Tan family interview summary

Tossed items on the ground are picked up and this thus shows sense of responsibility towards the environment. This approach and visibility of bins within their yard could conscientise the co-researcher towards avoiding littering. Two bins are placed outside the house, while one bin is inside the house. The parent monitors and communicates with the co-researcher against cleanliness. Regardless of that, their practices have difficulty to influence co-researcher with reference to the photo on 5.2A. EAR activity in this context conscientised co-researcher towards untidiness as displayed on photo 5.2B.

5.3.3 Maroon[*]

This family is headed by grandmother and speaks Sesotho. The co-researcher is staying with the grandmother and her uncle. The co-researcher was 14 years old, the grandmother was 77 years old and the uncle was in the early 40s. This table unpacks questions asked respondent and including the response.

Table 5.4: Maroon family transcript 10

Interviewers' Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influences your child's actions not to litter?	**Interviewee**: As you know how children are, I always push them to be clean and love themselves. They see and learn from me as I clean.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I always pick them up and place it separately in refuse bags for people who are collecting for recycling.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: She must learn how a house should be cleaned. Cleaning the house does not mean that the yard is clean. Like I said earlier, we start cleaning outside then move into the house and supervise her when cleaning.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: There are two litterbins, the small in the kitchen and the bigger one outside. In cases of events, we use refuse bags for extra garbage so that it can all be collected.

5.3.3.1 Maroon family interview summary

The guardian acts if she notices garbage on the ground and throws it inside the bin, and sorts other items for recycling. This is a sign of encouraging eco-friendly actions that could be escalated to the co-researcher eventually. The guardian supervises and communicates with the co-researcher to ensure that she is environmentally literate. In other manner, the family has two bins in and outside the house. Availability of bins within the yard could further

conscientise the co-researcher towards littering. Conversely, their practice influence co-researcher to a certain point of littering with reference to the photo on 5.3A. The uses of EAR activity gradually conscientise the co-researcher on littering as shown on 5.3B.

5.3.4 Summary of the families' case studied

Interviews conducted with these three families has revealed similar general approaches at home such as picking tossed items on the ground and bin it. This is a sign of positive environmental behaviour as they demonstrate good environment-friendly practices. Moreover, they use communication and supervision as methods of ensuring that co-researchers are environmentally literate. Literature suggests that family communication plays an important role in environmental decision-making (Dyck, 2012: 25). This further is explored on 6.7.1.

Both families have sufficient bins in their yards. One bin can be found inside the house while another one is observable outside the house. Therefore, this is in accordance with my observations. Nevertheless, their household practices influence co-researchers to a certain extent towards littering with reference to photos on 5.4 and appearance of co-researchers' rooms as some of them were untidy and their parents' complaints about their untidiness. This subsequent section explores co-researchers' yards through EAR activities.

5.4 PHOTOS OF FAMILIES CASE STUDIED

This section discusses data collected from co-researchers' home by means of photos. My discussions are based on comparison of two sets of photos taken before and after interventions were implemented together with co-researchers.

5.4.1 Navy-Blue* yard

The context of this family was discussed above on 5.3.1. Photo 5.1A shows unwanted items on the ground and this seemed not to bother residents as

these items disorganise the yard. As a result, EAR activity was initiated with the co-researcher to clean the yard regularly in order to conscientise the co-researcher towards littering. Two litterbins are observable. One bin has garbage inside and overflowing while the other one has faced down as shown on photo 5.1A. In between these bins, a sack is observable resulting from overflowing. As well, there is a visibility of plastic bag hanged on the washing line and this indicates that this family practices reuse, recycle and reduce (Rs). This implies that they are on the correct path of practising Rs approach.

The second photo 5.1B shows the area after intervention. EAR activity has influenced residents as there is less litter on the ground and two bins are now utilised. Subsequently, boards were placed on top of each bin to avoid spillage of trash as dogs push bin down in order to get edible garbage. Furthermore, rats get inside the bin to eat garbage, which further cause spillage. In addition, Navy-Blue family paved the area and painted their house, shack and the walls as shown on photo 5.1B. EAR activity has conscientised members of the family towards cleanliness as the yard is orderly organised.

A   B

Photo 5.1: Navy-Blue yard

5.4.2 Tan* yard

On subsection 5.3.2, I explained the milieu of this family. This subsection interlinks above discussed issues emerging from the interview.

Photo 5.2A shows littered items and tap leaking water. Littered items are trapped inside this drain resulting from residents' actions. In turn, these items blocked the drain as indicated on the photo owing to water not flowing down the channel. Consequently, these items caused an unpleasant smell thus pose a health risk. In addition, choked drains provide excellent breading grounds for mosquitoes (Das, 2014: 11). This photo further shows littered items and other items such as bricks lying around disorganised. As well, the litterbin visible on this photo is empty while trash is noticeable on the ground.

On the other hand, photo 5.2B shows litterbin stationed at the corner with lid on top, bricks packed together and other items packed under the table. In addition, they have replaced tap as it was releasing water constantly, leading to wastage of water. This shows an improvement as compared to photo 5.2A. This indicates that EAR activity achieved its objective of raising co-researcher and family members towards cleanliness and untidiness.

A   **B**

Photo 5.2: Tan yard

5.4.3 Maroon* yard

The miliue of this family was discussed on 5.3.3 together with the interviews conducted with the guardian of the co-researcher. Photo 5.3A shows some of the items misplaced on the ground such as metal sheets and buckets. On the ground, there is also visibility of plant leaves which makes the yard untidy. This photo also shows a dog leached on a rope and with plates next to it.

Photo 5.3B shows litterbin, clothes hanged on the washing line and sack with plant potatoes inside. EAR activity has influenced family members to start a garden using a sack and this approach will have an effect on co-researcher' awareness of re-using waste resources. In addition, clothes hanged on the washing line could also conscietise co-researcher towards cleanliness.

A   B

Photo 5.3: Maroon yard

5.4.4 Interpretations of photos from families' case studied

Both photos on these families' showed littered items tossed or misplaced on the ground. This indicates that in fact littering does occur at home. After EAR activity of cleaning up was conducted by co-researchers and family members, their yards have improved. Consequently, few littered items were found on the ground.

Two sets of photos were captured to compare the situation before and after intervention has taken place. In addition, the photos are meant to show the reader how EAR activity addressed untidiness and raised awareness. Furthermore, the photos are meant to address trustworthiness issue. Moreover, these photos have supplemented other research instruments that I discuss in Chapter Six. Photographs assist in the production of descriptive data and contribute to the production of comparative data in the research process (Attané, 2011). Photos used in this chapter were labelled, numbered and discussed. This was done to make sense of the photos. As photos are open to interpretation, they can be understood from different viewpoints (the producer, the audience or the photo itself) (Spencer, 2011: 133).

5.5 INTERVIEWING TECHNIQUES

Conducting and transcribing interviews take more time and require more energy. As the novice researcher and conducting interviews as part of data collection, it was a bumpy ride. I had to learn to pay attention, keeping eye contact and probing technique. However, probing should be neutral so as not to affect the nature of the response (McMillan & Schumacher, 2010: 208). In the next subsection, I present interview questions and response of respondents.

5.5.1 Interviewee respondent one (IR-1) to interviewee respondent thirteen (IR-13)

Thirteen interviews were conducted with parents/guardians. In this subsection, I first give readers the structure of the interviews, followed by discussions from interview one to interview 13.

Table 5.5: Structure of the interviews

RESPONDENT	DATE	TIME	DEMOGRAPHICS		PLACE	DURATION
			RELATION	AGE		
IR-1	25/10/2015	09h40	Brother	28	Thokoza	10 minutes 34 seconds
IR-2	25/10/2015	11h06	Mother	38	Katlehong	13 minutes 30 seconds
IR-3	25/10/2015	12h15	Mother	47	Thokoza	6 minutes 30 seconds
IR-4	25/10/2015	13h30	Sister	26	Thokoza	6 minutes 32 seconds
IR-5	27/10/2015	15h30	Mother	31	Thokoza	7 minutes 26 seconds
IR-6	27/10/2015	16h15	Father	40	Thokoza	8 minutes 50 seconds
IR-7	27/10/2015	17h05	Mother	40	Thokoza	12 minutes 58 seconds
IR-8	28/10/2015	15h40	Mother	50	Katlehong	7 minutes 21 seconds
IR-9	21/11/2015	10h20	Mother	37	Palmridge	10 minutes 19 seconds
IR-10	21/11/2015	12h10	Grandmother	77	Thokoza	14 minutes 8 seconds
IR-11	21/11/2015	15h22	Mother	38	Thokoza	16 minutes 46 seconds
IR-12	23/11/2015	15h40	Grandmother	61	Katlehong	4 minutes 2 seconds
IR-13	9/12/2015	15h30	Mother	41	Thokoza	13 minutes 17 seconds

5.5.1.1 Interviewee one: IR-1

Table 5.6: Interviewee one: IR-1

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influences your brothers' actions not to litter?	**Interviewee**: Yes, they influence him, but then I am not sure if I will be deviating by saying littering creates jobs. If you throw 2L bottles away, there are people that collect plastic bottles and exchange these bottles for money so that they can put food on the table.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: It depends; some of the items I pick them up but some I just leave them on the ground because you never know what kind/type of diseases one can get from them.
Interviewer: What are the methods that you apply to ensure that your brother is environmentally literate?	**Interviewee**: I cannot say he is environmentally literate because you know children nowadays are not responsible. Then as I said earlier on if the township is clean there won't be jobs for the people who pick up the papers out there. Then because people litter, in other ways they create jobs for the people that the government employs to take care or be in charge of the environment.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: We have two outside the house and inside the house, I just use a plastic.

- **IR-1 summary**

Respondent answers reveal negative attitude towards the environment as he throws trash on the ground to create jobs and further he picks up trash on the ground if they do not pose a health threat. However, they have two bins outside the house. The analysis reveals that the respondent lacks environmental awareness (EA) and knowledge and his actions do not influence the co-researcher to act against littering.

5.5.1.2 Interviewee respondent two: IR-2

Table 5.7: Interviewee one: IR-2

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's actions not to litter?	**Interviewee**: Yes, I am not going to allow my child to be a litterer. By dropping trash on the ground because I have the litterbin in the house. I tell him when he sees garbage on the ground he has to put it inside the litterbin. In addition, if the litterbin is full inside the house there is another big litterbin outside; he must drop it in there.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: We use plastics on our hands, as we do not have gloves; so, that we can pick them up.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: I observe my child closely to make sure that he has done what I taught him.
Interviewer: How many litterbins do you have in	**Interviewee**: I have two. Inside the house, I use a bucket and inside the bucket. I put a plastic

and outside the house?	so that when I throw the garbage I take out the plastic instead and I put it inside the big litterbin outside.

- **IR-2 summary**

The parent seemed to have environmental knowledge and positive behaviour towards the environment because she and the co-researcher pick up garbage on the ground and disposed in the bin. This further indicates awareness as they avoid picking trash with their bare hands instead they put on plastics on their hands. Furthermore, the parent observes the co-researcher closely and makes use of demonstration and supervision to make sure that the co-researcher completes the task. The parent makes use of two bins including the bucket inside the house as another approach of conscientising co-researcher towards cleanliness and littering.

5.5.1.3 Interviewee respondent three: IR-3

Table 5.8: Interviewee one: IR-3

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's actions not to litter?	**Interviewee**: Yes, because when he sees some unwanted items on the ground, he picks them up throw in the litterbin because they pose dangers a child can step on a banana peel and get seriously hurt.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I put it in the litterbin.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: We talk with him for things that he should do.

Interviewer: How many litterbins do you have in and outside the house?	Interviewee: We have one litterbin outside; we use the litterbin outside simultaneously every time we cook.

- **IR-3 summary**

From the interview dialogue, it was indicated that daily activities influence the co-researcher not to litter. The co-researcher picks garbage on the ground when he sees such items and bins it. More importantly, the co-researcher learned that from the parent as she also throws trash inside the bin. Further, the parent communicates with the co-researcher as part of household practice/method to ensure he is environmentally literate. Though they have insufficient bins, one litterbin can be found outside the house, which thus fills it up quickly as they also have renters. In turn, this bin could overflow as the municipality collect garbage once in a week.

5.5.1.4 Interviewee respondent four: IR-4

Table 5.9: Interviewee one: IR-4

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influences your sister's actions not to litter?	**Interviewee**: I do not know.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I tell the kids to put them in the litterbin always and if they are not around I do it myself, it is my job to do so.
Interviewer: What are the methods that you apply to ensure that your sister is environmentally literate?	**Interviewee**: Actually, I do not say much. I do not want to lie about that.
Interviewer: How many litterbins do	**Interviewee**: Inside the house, we use

you have in and outside the house?	bucket for baby nappies and then outside the house is a litterbin.

- **IR-4 summary**

The respondent was not sure if daily activities conducted at home influence the co-researcher not to litter. However, the respondent indicated that she picks trash on the ground together with the kids. This approach could also influence the co-researcher to develop awareness towards littering. She communicates with the co-researchers. One proper bin is situated outside the house to dispose litter, which will be filled quickly as they have renters. Inside the house, a bucket is used to keep baby nappies. This is an indication that this family has few bins.

5.5.1.5 Interviewee respondent five: IR-5

Table 5.10: Interviewee one: IR-5

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's actions not to litter?	**Interviewee**: Yes, because we do not throw away papers but we throw them inside the litterbins.
Interviewer: When you see plastics, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I pick them up and throw in the litterbin.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: Well I tell her to wash her hands when she comes from the toilet and to cover her mouth whenever she coughs. Even if she is not from the toilet, preparing food she has to wash her hands always.
Interviewer: How many litterbins do	**Interviewee**: One litterbin outside.

| you have in and outside the house mama? | Anytime I cook I throw whatever trash in the plastic then after cooking I take the plastic put it in the litterbin outside. |

- **IR-5 summary**

The respondent emphasised the issue of picking up trash on the ground and place it inside the bin. Furthermore, the respondent communicates with the co-researcher to ensure that environmental literacy is part of household practice. However, they have insufficient litterbins; they use outside bin simultaneously whenever they cook. This approach does point lack of EA as the respondent waste plastic bags but instead she could use bucket as an alternative for a bin. In addition, she could make use of plastic bags to design artistic work as a way of practising Rs and conscientising the co-researcher towards littering.

5.5.1.6 Interviewee respondent six: IR-6

Table 5.11: Interviewee one: IR-6

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's actions not to litter?	**Interviewee**: No, I do not think so. They like to ride bicycle in and out with their friends. They play around and they like to eat bunny chow and throw the plastics around.
Interviewer: When you see plastics, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I normally pick them up and put them in the litterbin then later I would find them outside the yard. Still it does not make any difference, then a day later after picking them I find more plastics.
Interviewer: What are the methods that you apply to	**Interviewee**: I communicate with him. Maybe I want him to wash the car or one of the bikes out

ensure that your child is environmentally literate?	there. I will call him and say 'bro wash the car' he does it with no complains, he just washes the car quietly so and clean. He does not complain. If I tell him to mow the lawn he will definitely do that, you understand. Thus, we usually have a verbal communication.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: We have one in the house and two outside.

- **IR-6 summary**

Daily activities have minimal impact on the co-researcher towards littering even though the parent picks up trash on the ground but later will still found more plastics. This is regardless of the communication the parent has with the co-researcher and availability of three bins in and outside the house. Friends' network has negative influence on the co-researcher as they eat bunny chow and leave plastic bags on the ground.

5.5.1.7 Interviewee respondent seven: IR-7

Navy-Blue family's response is detailed above on 5.3.1.

5.5.1.8 Interviewee respondent eight: IR-8

Tan family responses are outlined above on 5.3.2.

5.5.1.9 Interviewee respondent nine: IR-9

Table 5.12: Interviewee one: IR-9

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's	**Interviewee**: Yes, they do a lot. She sees cleanliness around her and that teaches her to take care of herself.

actions not to litter?	Like washing her shirt everyday and not wearing it days in succession.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: We pick them up and throw in the litterbin.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: They always pick up litter and clean their dirt. We throw everything in the litterbin because I have a smaller one inside the house.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: I have two litterbins, the smaller one in the house and the bigger one outside.

- **IR-9 summary**

As indicated, the co-researcher washes her shirt on regular basis this does conscientise her towards cleanliness which subsequently could raise her awareness of littering. In addition, picking up trash on the ground might further influence the co-researcher towards littering. As well, sufficient litterbins can have impact on the co-researcher to act against littering.

5.5.1.10 Interviewee respondent ten: IR-10

Maroon family interview questions and response are detailed above on 5.3.3.

5.5.1.11 Interviewee respondent eleven: IR-11

Table 5.13: Interviewee one: IR-11

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence	**Interviewee**: Yes, it teaches her especially when she sees me performing such duties on days when she is tired. She realises that even when she is visiting she needs to wash dishes before she goes

your child's actions not to litter?	to bed, clean the toilet and sweep the yard in the morning. I am teaching her even though I am not exactly telling her in words, she learns from me as I have learned from my upbringing.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: We always pick up litter. Yellow* has a younger brother and they take a garbage bag and pick up papers and plastics lying around. We try by all possible means to keep the yard clean, that teaches them to be responsible of their cleanliness, and this will help them in their adulthood.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: Yes, the grandmother always teaches her about self-love and responsibilities. She always stresses that one must love and take care of themselves and their surroundings. Now Yellow* is transferring such knowledge to the brother.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: We have one big litterbin outside and the smaller one in the kitchen. Then hang up bags if full.

- **IR-11 summary**

Aforementioned activities deal with cleanliness and tidiness aspect. These could have a positive impact on the co-researcher towards litter issue as they promote cleanliness in and outside the house coupled with the fact that they pick litter on the ground and bin it. Furthermore, intergenerational knowledge seemed to escalate from one member to another. In addition, this family has enough bins, the parent and grandmother communicate with the co-researcher on issues of cleanliness, and this could improve their environmental knowledge.

5.5.1.12 Interviewee respondent twelve: IR-12

Table 5.14: Interviewee one: IR-12

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's actions not to litter?	**Interviewee**: Yes, they learn from my work.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I pick them up.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: I have not started with that.
Interviewer: How many dustbins do you have in and outside the house?	**Interviewee**: I only have one litterbin outside.

- **IR-12 summary**

The grandmother seemed to think her daily activities influence the co-researcher not to litter as she picks up trash on the ground. However, on the contrary, the grandmother could not state methods she uses to ensure co-researcher is environmentally literate. In addition, they have shortages of bins. This could result in their bins filled up quickly since they have renters in their yard.

5.5.1.13 Interviewee respondent thirteen: IR-13

Table 5.15: Interviewee one: IR-13

Interviewer Questions	Interviewee Response
Interviewer: Do you think your daily activities towards the environment influence your child's	**Interviewee**: Yes, a lot. They know that after say for example peeling, onion or tomato, they must rinse and

actions not to litter?	sort out dishes. Everything must be organised even papers must be picked up. I teach them because this will benefit them in the future.
Interviewer: When you see plastic, papers and other unwanted items on the ground, what do you do?	**Interviewee**: I pick them up and place them separately. Then when the sun sets, I collect and burn them because they fill up the litterbin. The litterbin has a refuse bag inside specifically for food items.
Interviewer: What are the methods that you apply to ensure that your child is environmentally literate?	**Interviewee**: I show her where she did not properly clean. I demonstrate and we do it both then she learns from that.
Interviewer: How many litterbins do you have in and outside the house?	**Interviewee**: We have a small bin in the house and the bigger one outside. When the small one is full, we put garbage in the refuse bag and empty it into the bigger one.

- **IR-13 summary**

In preparation of food, the co-researcher washes hands to avoid contaminating food with germs. This deals with aspects of health issue and cleanliness, which could further influence the co-researcher not to litter. The parent might influence the co-researcher towards litter issue as she also picks trash on the ground. Irrespective of having sufficient bins, she disposes the trash incorrectly as she burns the trash. As a result, this pollutes the air and her approach indicates lack of EA and might have negative impact on the co-researcher.

5.5.1.14 Summary of the interviews

Summation of the interviews conducted above shows that most families found to have sufficient bins inside and outside the house. Mathe (2014) found that where there are more bins littering is minimal. Moreover, interviews indicated household practices that may influence co-researchers towards littering such as cleaning of the house and yards, washing dishes, clothes, and hands. A cleaning house and yard eliminate untidiness and health issues as dirty places disease are imminent. Washing of dishes, clothes and hands address hygiene aspects and this will possibly raise co-researchers' awareness of cleanliness. Cooking deals with hygiene issues such as washing hands before starting to eat or preparing foodstuff. Therefore, hand washing reduces the incidence of diarrhoeal diseases and respiratory infections (Mech & Ojah, 2016). Subsequently, these household practices might raise co-researchers' awareness of littering since most parents/guardians use demonstration, supervision and communication as methods of guiding co-researchers to be environmentally literate.

In addition, demonstration aimed to show co-researchers how certain tasks are conducted. Supervision meant to check if the skills/knowledge that was imparted was learned. Lastly, use of communication to enforce learned skills and constantly reminding co-researchers as children likes to play as indicated above. Istead (2009: 82) argues that strong communication between family members is necessary for effective intergenerational influence to occur. The succeeding section discusses AR challenges within the study.

5.6 CHALLENGES

Challenge refers to factors that hindered the progress of the study, which obstructed co-researchers and myself to achieve anticipated objectives of intervention programmes, and the study to move at snail pace. These challenges can be classified as general problems associated with AR in nature

and problems we have faced during the research journey. However, in AR, everything that hinders the study is considered part of data collection process.

5.6.1 General challenges associated with action research

AR challenges involve ethical issues such as assent letters, consent forms, requesting permission to observe at home and other issues, the accuracy of collected data, generalisability of research findings, gaining co-researchers trust, cooperation among co-researchers, shared control/power, and emotions attached withdrawal of co-researchers and other factors. However, one of the challenging factors of using AR is that I do not have any control on co-researchers but I should stir the ship together with co-researchers (O'Leary, 2014). Co-researcher(s) can be sick or be absent from school for more days or withdraw from the study. Furthermore, AR is always biased because it involves me in analysing my own practices (Carr & Kemmis, 1986; Nieuwenhuis, 2008). Therefore, these factors challenged me as AR practitioner. Nonetheless, AR practitioner approaches the study with a consciousness in mind.

AR often brings together a mixture of people with different orientations to knowledge (Hillcoat, 1996: 154). Co-researchers, School Environmental Committee (SEC) and I had different orientations about observed behaviour and other elements of data especially when we were observing classes for class competition.

Koshy (2005; 2010) further emphasises that AR findings are not generalisable because it addresses local issues, therefore implies lack of credibility. Nevertheless, action researchers do not set out to seek generalisable data, but to generate knowledge based on action within one's own situation (Koshy, 2005: 30; 2010: 37). Despite that, AR results though are generalised to locality but can be applied to other situations where same problem exist.

5.6.2 Challenges that we faced within the study

This subsection describes problems that co-researchers and myself have experienced during the course of the study.

5.6.2.1 Unavailability and withdrawal of parents

The study intended to interview 14 participants but owing to unavailability of one parent, 13 participants were interviewed. I called the parent several times to arrange a meeting and dates were set aside and the parent would cancel at the last minutes stating various reasons including attending funeral, going to work, home etc. In addition, four parents/guardians out of seven withdrawn from the study after they agreed to form part of case study at home to carry out EAR activities with co-researchers.

5.6.2.2 Execution of environmental action research activities at home

After parents/guardians agreed to give, their children EAR activities at home but I observed that such activities were not executed when I visited their homes. Subsequently, I delivered flowers (details of these activities are in [Chapter Six](#) under 6.5) etc. to their homes as a way of encouraging parents/guardians to give co-researchers EAR activities and do monitor them.

5.6.2.3 Selection process

A number of learners in certain classes declined to be part of the study during selection period. This was observed to be peer influence because I have selected co-researchers in their respective classrooms.

5.6.2.4 Meeting with parents/guardians

I issued out letters to arrange the meeting with the parents/guardians of the co-researchers but one parent came. As a result, I had to call all of them. The purpose of the meeting was to check if parents received letters and understand the whole process of the study. Some parents/guardians preferred to come to

school for further explanation but out of three parents/guardians who agreed to come to school after a phone call, only two parents/guardians came.

5.6.2.5 Informing school members

A letter requesting a meeting with Grade 8 class managers was submitted to the deputy principal for GET. The meeting did not materialise after deferral. Instead, class managers received communiqué from the GET deputy informing them about the study and the involvement of some learners in their class. I have also submitted the letter to the principal's office requesting to meet the SMT members. The office failed to respond back to me. I further made a follow-up with the GET deputy and principal, and both promised to read the letter to the members during the meeting. They meet every day in the morning to brief SMT members and the meeting did not materialise. Therefore, the study continued without the support from the SMT members.

5.6.2.6 Engaging school environmental committee

Organising a meeting with the SEC was difficult since the committee was inactive. Meetings were rescheduled several times owing to the absence of some members and other factors.

5.6.2.7 Challenges with co-researchers

Five co-researchers withdrew from the study. Four co-researchers withdrew from the study after the deputy principal threatened them (see Appendix 5.1) and one co-researcher was owing to relocation to another province. It was difficult to meet with co-researchers during mid-year exams because they were writing two papers in a day. For the duration of exams, the daily running of the school changed as learners wrote first session in the morning (9h00 – 11h20) and second session after lunch, which started at 12h30 to 15h00. After school, we could not meet as they were preparing for another paper. In addition, our scheduled meetings/activities were postponed quite regularly as the school dismissed early owing to water shedding. Moreover, a number of scheduled

meetings/activities every week had many absences caused by different reasons such as sickness, attend family funerals, baby-sitting their siblings and others were locked outside the schoolyard as the school locks gate at 08h00.

5.6.2.8 Co-researcher project was stolen

A teacher took a hat from the co-researcher, which she wanted to show her class about recyclable materials that could be turned into arty but unfortunately, the hat was stolen from the class. Because of the theft, the co-researcher recreated the hat again.

5.6.2.9 Problems experienced during interviews

First six interviews conducted, I experienced language barrier as interview question were in English and isiZulu version. For the third and fifth interviews, parents preferred to be interviewed with English but during the interviews, the participants responded speaking Sesotho on certain questions. The fourth interview owing to language barrier, I conducted the interview with the older child of the guardian. This was done to avoid financial and time constraints. Moreover, the seventh participant was called to check the language she will prefer and isiZulu was chosen but it was observed that the mother actually speaks Sesotho. During the interview, the mother answered the questions with isiZulu and Sesotho. After the seventh interview, the process was postponed owing to language barrier in order to find a professional language translator to translate English version to Sesotho. In addition, owing to inability to speak Sesotho and isiZulu fluently, I asked my colleague to conduct the interviews on my behalf.

5.6.2.10 Assistance from ground man

The deputy principal stopped one ground man who was helping us to put emblems around the school on the walls numerous times. Some reasons that the ground man was stopped include drill makes noise, extension cord has

faults and other reasons. This task was conducted after school hours. Subsequently, one weekend was put aside to complete the task.

5.6.2.11 Union meetings

South African Democratic Teachers Union (SADTU) arranged numerous meetings such as regional cluster meeting. I was a SADTU member so all the meetings that were called I attended and scheduled meeting/activities were cancelled on those days as school dismissed early.

5.6.2.12 Communication with the principal office

Office of the principal withdrew a single day for class completion awards claiming that they were not aware about the event that was supposed to be held at assembly on the 31/10/2016. The event subsequently was postponed to 04/11/2016 which also the event did not take place due to final examinations. As a result, SEC wrote a letter to the principals' office to propose 23/01/2017 for awards and the awards took place on the 30/01/2017 a week after the proposed date.

5.6.2.13 Challenge to grow seedlings on the garden

Worms, mice and birds attacked planted seedlings. This has delayed growth of the seedlings. Red-hot chilli pepper was used in attempts to kill worms on the ground. The cause of worms on this land could be that it was never planted before as it was a dumping site.

5.6.2.14 Seedlings removed from the garden

Disinterested people removed seedlings from the garden. This disruption was done after school and during weekends. This has affected co-researchers badly as their efforts were wasted.

5.6.2.15 Intervention programme

Litter pick up duty roster was submitted to the principals' office but instead the school roped in vendors to pick garbage on the ground every day after lunch. As it was stated, "vendors sell these products to the learners and if they were not selling at school we wouldn't experience litter". The principal stated this during staff meeting dated 17/08/2016. In addition, co-researchers presented two campaigns at assembly and the slot was taken away and given to Grade 12 learners to motivate their peers.

5.6.2.16 Class competition

Some teachers refused co-researchers to observe their classes and this could suggest that teachers are aware about the status of their class and do not help learners to keep their class clean. The ensuing section reflects on the research journey. Even though there were some above listed huddles as this is part and package of AR, co-researchers participated in the study as outlined in Table 5.16 below.

5.7   PROGRAMME ENGAGING CO-RESEARCHERS IN SCHOOL

This programme was used to engage co-researchers in EAR activities throughout the research journey.

Table 5.16: Programme engaging co-researchers in school

Term	Learning circles	Strategies	Embark date
One	Environmental campaigns	• Co-researchers pick papers around the school. • Co-researchers address learners at assembly through poems to raise their awareness.	10/02/2016 See chapter five under section 5.6.2.15

	Litter pick-up duty roster	Learners and teachers included on the roster to encourage taking responsibility and reducing littering.	See chapter five under section 5.6.2.15
	School environmental policy (SEP)	Copies distributed to teachers to provide guidelines and address littering.	01/03/2016
	Environmental calendar	Copies distributed to teachers and co-researchers in order to be informed.	10/03/2016
	Vegetable garden	To cultivate seeds and seedlings to nurture co-researchers awareness.	14/03/2016
Two	School registered as Eco-school	To influence school members to take part in the environmental activities.	19/03/2016
	Designing litterbins	To reduce littering and raise learners' awareness.	31/03/2016
	Litterbins installed		04/04/2016
	Watering plants	Make use of containers to water trees.	19/04/2016
	Paint litterbins	To use school uniform colours to catch learners' attention.	10/05/2016
	Installing boards naming plants	Use boards and steel to give plants names.	23/05/2016
Three	Crocheting	Make use of plastic bags and crochet instrument.	19/07/2016
	Class	Buy cleaning material and voucher	22/08/2016

	competition	to be won.	
	Celebrating Arbour day	Utilize environmental calendar.	01/09/2016
	Make manure	Collect waste materials from the school kitchen.	06/09/2016
	Draw litterbins	To catch learners attention in order to use litterbins and stop littering.	08/09/2016
	Attach emblems on school walls	Make use of drums lid and paints.	22/09/2016

5.8   TERM ONE

Throughout this term, co-researchers were engaged in a continuous learning cycle activities to address identified problems from the data collection methods. Designed and planned EAR activities were informed by first set of a questionnaire and interviews conducted with parents/guardians at home. These activities anticipated to raise co-researchers' awareness of littering.

5.8.1 Environmental campaign

We used environmental campaigns including reciting poems in the assemblies and we picked papers around the school. During Mondays at assembly, one of the co-researchers recited a poem to convey the message to the learners to raise their awareness towards littering. However, the campaign was short lived (5.6.2.15 in chapter five explain this further).

Photo 5.4A shows littered items behind toilets. Littered items such as bottles, papers and other items are visible on the photo. Photo 5.4B shows an area after it was cleaned but birds' faeces are visible on the floor. The intention of the campaign was to encourage co-researchers and learners to stop littering their environment. During pick-ups, some learners will drop littered items on

the ground deliberately so that we move back and forth. Some comments were made such as "Sir, do you want to swap your position with grounds staff?" Others told their peers (co-researchers) "are you mad guys or is the school going to pay you for cleaning?" Their comments showed lack of awareness on littering and responsibility.

A   **B**
Photo 5.4: Environmental campaign

5.8.2 Litter pick up duty roster

"I do not understand why the school is using grounds staff to pick papers on the ground and not learners because we litter the school" said co-researcher. We then designed litter pick up duty roster after some of the co-researchers' complaint about the behaviour of learners. The roster was designed to involve all school members as suggested by some co-researchers. Litter pick up duty roster also addressed lack of environmental monitoring tool in the school. It was observed that lack of monitoring influences learners' bad decision of tossing waste in their immediate milieu (Msezane, 2014: 73). We submitted the roster to the SEC and this was done to make the SEC functional. The SEC escalated the document to the principal's office.

5.8.3 School environmental policy

School environmental policy (SEP) was designed to address environmental issues including littering (the policy is in Appendix 5.2). The policy is necessary

to guide the development of action plans (Simalumba, 2011: 133). The policy was submitted to the SGB for its approval and implementation in order to be part of school policies. After the amendment and approval of the policy, we then escalated the policy to the SEC in order to make the committee active and bring it on board.

5.8.4 Environmental calendar

Due to the absence of the environmental day celebration at school, I downloaded the environmental calendar from Rhodes University website and gave co-researchers and SEC copies. Environmental calendar is in Appendix 5.3. Co-researchers filed the calendar in their Social Sciences (SS) book. Their peers as well requested a copy of the calendar. As a result, SEC submitted the copy to the office and the school made A3 copies for all teachers and pasted in their classes and as well in the staff room. We did this to allow learners and teachers to have access to the calendar but at the same time to enhance their knowledge about environmental days.

5.8.5 Vegetable garden

We prepared a dumping site within the schoolyard and converted it into a vegetable garden. Grounds staff used to dump garbage and burn it on this plot as they collect waste materials around the school daily. The vegetable garden was meant to raise co-researchers' EA, instil positive attitude and bring co-researchers closer to the environment. Co-researchers brought different seeds from home such as spinach, tomatoes, beetroot, and pumpkin as others their parents/guardians are involved in a community food garden project.

The land was prepared for almost three months because we had to remove hazardous items such as bottles found on this land. We buried some of the waste that decays to fertilise the soil and to soften the soil first before we start cultivating. After preparing the land, we started the process of cultivating seeds

and seedlings. After cultivation, each co-researcher owned a row to nurture the seedlings and instil care.

Some co-researchers said, "All teachers and learners must join us since this garden will contribute more vegetable especially in the school kitchen". Another co-researcher mentioned, "This garden besides producing vegetable but also makes us to respect the environment and learn how to plant seedlings and seeds because at home some of us don't have vegetable garden". Cross (2013: 2) argues that one-way to connect young people to the environment may be to create a school garden, where the learners will be responsible for designing, planting, maintaining, and harvesting vegetables. Exposing children to gardening at school could be an avenue for cultivating future environmental stewards. Co-researcher said, "My mother was so happy when I brought the spinach that we have harvested yesterday because she thought I was lying when I told her that we have started the garden at school".

Photo 5.5A shows co-researchers and myself preparing the land using spades, forks and wheelbarrows. Photo 5.5B shows a land with vegetation after cultivation. Gaps in between the vegetation was a result of sabotage (refer to 5.6.2.14). Photo 5.5B shows fence that we erected surrounding the garden so that school members could see that the plot is utilised.

A   B
Photo 5.5: Vegetable garden

5.8.6 Term one reflections

The activity of cleaning was successfully carried out with co-researchers in a sense that littered area as shown on photo 5.4 was cleared. Furthermore, the SEP unfolded as follows: we designed the policy, submitted to the SGB for implementation and lastly escalated to SEC. The policy was partially implemented but all teachers received copies of the policy and were pasted inside their classrooms. In some classrooms, the learners removed the policy on the walls. Moreover, availability of the environmental calendar to all school members to a certain extent has improved their knowledge about environmental days. Earth and Arbour Day were celebrated in the school. Reciting of poems at assembly was negated by some school members because of that emblems were designed (as shown on 6.3.6 on chapter six). Consequently, litter pick up duty roster failed to be implemented (details are discussed in 5.6.2.15). Subsequent section discusses the reflections.

5.9 REFLECTIONS: RESEARCH JOURNEY ON THE RESEARCH PROCESS

Reflections in this context refer to recounts of the research journey that I underwent throughout including the good narratives and hardships. This also adds to the issue of trustworthiness.

5.9.1 Searching relevant literature

As a novice to academic research, I found the process of finding literature both challenging and interesting (Mohammed, 2016). It was quite challenging to find the literature that directly relates to the study. However, some studies to a certain extent relate to the study. Owing to the difficulty of finding relevant literature, I sought help from librarians from Unisa. The literature was reviewed under different aspects, which were related to the study. This process made the review to be easy and flow smoothly from aspect to aspect.

5.9.2 Research site

Accessing the research site, it was easy as I was part of teaching staff working within this institution and I attained permission from GDE without any complications (The certificate is in the Appendix 1.6). However, I also encountered challenges to acquire ethical clearance from Unisa to start collecting data hence data collection started late 2015 and I had to reapply permission from GDE for 2016.

5.9.3 Contribution of WhatsApp on the research journey

The use of WhatsApp enhanced communication between my supervisor and me. Through this platform, concerns and confusion were addressed immediately. Progress of the study and challenges I faced were addressed on this platform. This application was utilised for counselling purpose, as at times I felt down and out of touch with the study. The advantage of this application saved us money as it is cheaper to text than to make phone call. In addition, I could send information and capture screenshots, and send it over to supervisor at flexible time.

5.9.4 Knowledge contribution by workshops and conferences

I treated this study as a puzzle as I was learning throughout this study. My methodological stance was restructured/reformed throughout. The workshops I attended at Unisa, Pretoria campuses and, Doctoral (PhD) and Masters Annual Conferences arranged by Unisa contributed more information on this study. Workshops were structured in a way that addresses problems encountered from proposal stage to the chapters. Annual conferences were meant to groom students to become researchers. The conference gave students a chance to present their work and fellow student and lecturers to critique their work in the process. In addition, the South African PhD Project regional conference, which was held in Gauteng Province, Midrand Conference Centre on the 11th October 2016, contributed immensely on the study.

5.10 CONCLUSION

This chapter presented various topics such as school context, families' that participated in the case study and their photos, interviewing techniques, AR challenges and reflections on the study. These were putting the context of the study for readers to understand the whole process and retrace my conclusions at the end. The insights from parents'/guardians interview responses suggest that household practices could be effective on co-researchers. The study conscientised them on litter issue if such practices are carried out under supervision and constantly communicating with co-researchers.

In Chapter Five, I managed to outline the programme of engaging co-researcher in their schools, highlight activities of term one as well as hinting the reflections the research journey had taken on this research process. In the ensuing Chapter Six, I discussed other research instruments incorporated in both term two and term three of the South Africa school calendar.

CHAPTER SIX

ENVIRONMENTAL ACTION RESEARCH ACTIVITIES AND RESEARCH DISCUSSIONS

6.1 INTRODUCTION

This chapter presents two cyclic processes, which consist of term two and three of the national schooling academic year in South Africa. In this study, the word term as used refers to four periods in the South African school calendar year of teaching and learning. During these terms, environmental action research (EAR) activities were conducted with co-researchers at home and school. EAR activities refer to an environmental campaign that conscientise co-researchers towards litter issue at home and school. In each term, I described the EAR activities and reflections, and summation of the terms. Analysis or interpretations from each sub-questions and research instrument are discussed. In addition, this chapter presents research findings and discussions based on AR activities of term one (Chapter Five), two and three.

6.2 TERM TWO

Continuous learning circles build up from term one EAR activities discussed in Chapter Five. Term one was a learning curve process. EAR activities implemented were informed by term one activities and preliminary analysis from observations and journal writings.

6.2.1 School registered as Eco-school

The Eco-schools Programme is designed to infuse environmental learning to be part of school ethos. Wildlife and Environmental Society of South Africa (WESSA) manage Eco-schools Programme. To qualify as Eco-school, we first completed the registration form and send it over via the email to WESSA office. We paid registration fee of R995, 00 after completing registration form. Thereafter, WESSA posted a Compact Disk (CD) to the school containing

teaching and learning materials, and guidelines to compile a portfolio. We then followed seven steps to compile a portfolio. This included reviving School Environmental Committee (SEC), designing School Environmental Policy (SEP), conducting an audit and choosing a theme, linking action and curriculum, implementing and taking actions, submitting a portfolio, and lastly receiving an award.

After conducting an audit, local and global issues were chosen which thus include littering. The process of compiling the portfolio began following seven steps stated above. Photo 6.1 shows completed arty task done by Creative Arts (CA) learner who used waste materials including wool, cardboard box and scotch tape to design mortarboard. On top of the mortarboard, roundish yellow circle was placed to hide the identity of the learner.

This task forms part of linking action outside the classroom with the curriculum inside the classroom and raising their awareness towards littering. The aim of the Eco-schools Programme is to make environmental awareness (EA) and action an intrinsic part of the life and ethos of the school for both learners and for staff, which eventually spreads to engage the wider community (Dauti, 2014).
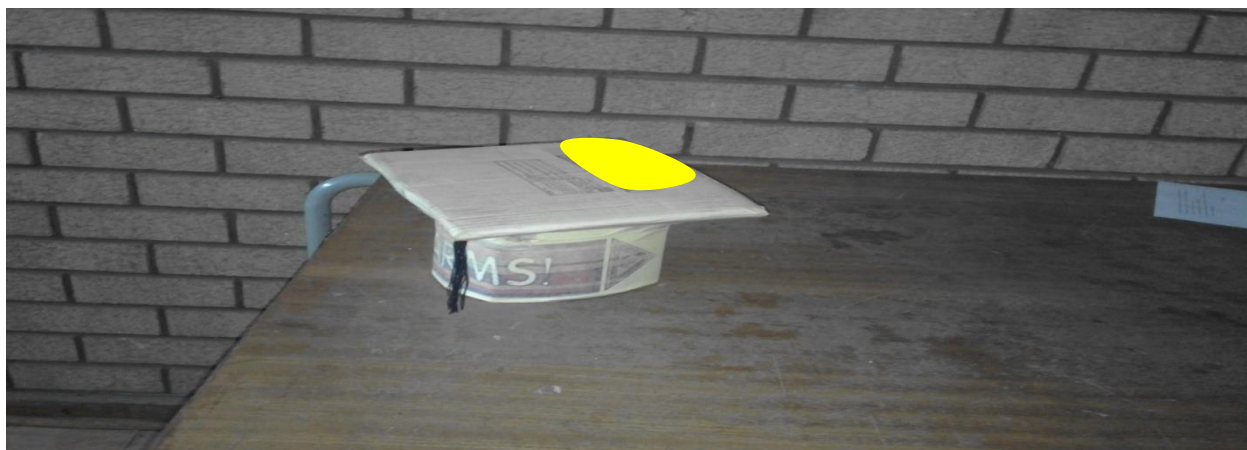
Photo 6.1: Action and curriculum

6.2.2 Designing litterbins

I bought 10 steel water drums and steel poles from a scrapyard and we requested grounds men to assist us in this regard to design litterbins. Steel water drums were cut on top to remove a lid. On these drums, grounds men welded pieces of tables/chairs steel at the top outer side to make litterbins to swing. Chairs and tables frames are dumped around the schoolyard resulting from vandalism. Small holes were drilled underneath drums to release liquid or water during rainy seasons. On these poles, grounds men welded steel to make arms to lock the litterbins. Photo 6.2 shows the whole process of designing litterbins: 6.2A ground man removing lid on the drum, 6.2B welding arms, 6.2C opening minor holes underneath the drum, and 6.2D a complete litterbin.

B   **C**   **D**
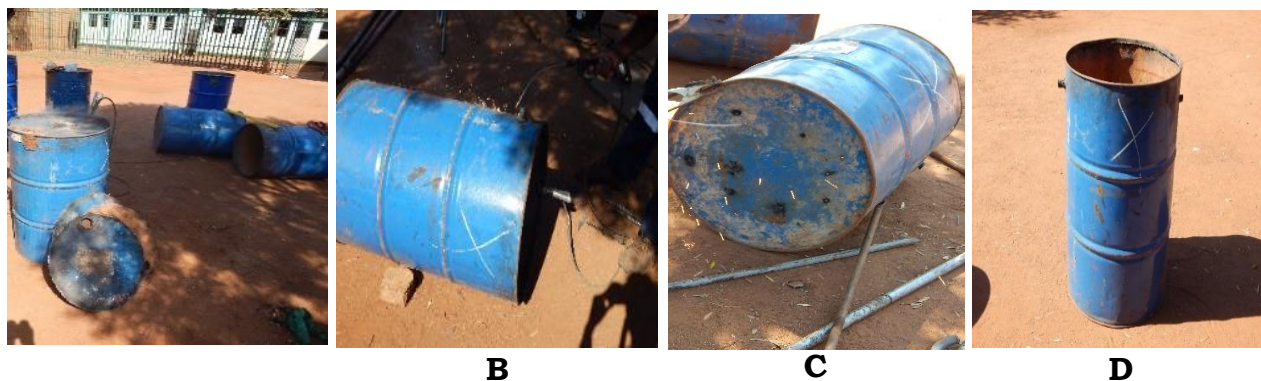
Photo 6.2: Process of designing litterbins

6.2.3 Installing litterbins

After the whole process of creating litterbins, we installed two steel poles on the ground and in between, we left space in order to hang litterbins to swing. Ten stationed litterbins were installed within the school campus. Two stationed litterbins were installed in each block. Each litterbin was installed at the learner entrance/exit gate and at the food court, respectively. A co-researcher indicated that "installing these litterbins we are leaving the legacy in the school since they will be used for the next coming decades".

Photo 6.3A shows an area with littered items on the ground and learners buying foodstuff from the vendors. On this photo, the far left side shows a group of learners and one learner turned the litterbin upside down for him to sit on it. This suggests lack of awareness. Photo 6.3B shows litterbins installed on the ground because the school did not have enough litterbins inside and outside the classes. These drums were bought and installed as litterbins as shown on photo 6.3B. The objective of installing these litterbins was to reduce littering in the school and to conscientise learners towards littering and visibility of few littered items on the ground showed improvement. Scholars such as, Mathe (2014) and Muñoz-Cadena, Lina-Manjarrez, Estrada-Izquierdo and Ramón-Gallegos (2012) found that littering is minimal where there are more bins.
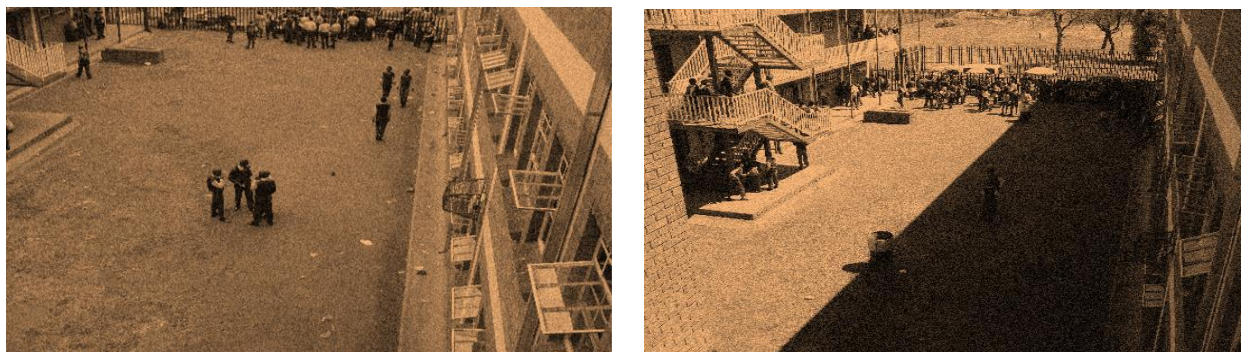
A   B

Photo 6.3: School ground

6.2.4 Watering plants

Since the plantation of trees on Earth Day celebration on the 22/04/2016, the school requested co-researchers and myself to take care of these trees. Their request was appreciated and each co-researcher adopted a tree. The activity of watering trees had two goals. The first goal was to teach co-researchers to save water as indicated on photo 6.4B. Co-researcher used buckets to fetch water from the tap to water these trees. Secondly, it was to instil a sense of ownership and respect for the environment. Photo 6.4A shows learners and

teachers planting trees as part of celebrating Earth Day. During the plantation of trees, it was observed that learners love outdoor activities and observations are logged in my journal. A learner said, "It was refreshing to engage in this activity and being away from the classroom. I wish the school could continue to celebrate environmental days". In addition, some learners were even hesitant to go back to their classes after plantation of the trees as this task was carried out in the morning.

A B

Photo 6.4: Trees

6.2.5 Painting litterbins

After the installation of the litterbins, we observed that littering behaviour continues and we therefore painted these litterbins. It was the first time for some of the co-researchers to be involved in such activity. Some learners indicated that "Sir, please don't comment about how we painted these litterbins because it is first time doing something like this". Another co-researcher said, "Though it is my first time painting but I am glad to be involved in this activity because of learning". Photo 6.5A shows two groups of co-researchers and another group visible far right painting litterbins. Furthermore, Photo 6.5B illustrates co-researchers and a SEC member painting the litterbin. Litterbins were painted with two different colours; the co-researchers suggested this. These colours symbolise school uniform as they wear brown and fawn as indicated on co-researchers' school uniform on the photos. Painting of

litterbins was intended to capture learners' attention and influence them to make use of litterbins, and to reduce littering in the school. "I used to throw papers on the ground but now I stopped littering because we have bins which are closer", co-researcher said.

A   **B**

Photo 6.5: Painting litterbins

6.2.6 Installing boards to identify plants

After celebration of Earth Day, trees were put under our care as stated before. Co-researchers were responsible for watering of these trees. This activity was intended to influence co-researchers to love trees. They named trees after caring words such as gift, hug me and other names. Trees are planted behind the classes at sports field and this area was named baby city. Whenever they come to the area, they would say "re lo bona bana ba rona"[1].

Photo 6.6A shows co-researchers and myself involved in the process of designing and writing names on the boards. Photo 6.6B shows co-researchers holding boards and a hammer in their hands to install boards with names on it next to their trees. Photo, 6.6C shows myself and co-researcher putting the board that has a name next to the tree. This tree was named hug name and the co-researcher standing in front of it belongs to her. The notion behind this activity was to make co-researchers to love plants and bond with nature in turn to raise their EA of littering. They were always clearing any unwanted

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[1] We are going to see our kids.

items such as plastics wrappers next to their plants. This was meant to instil sense of ownership in their immediate environment starting with these plants.

| A | B | C |
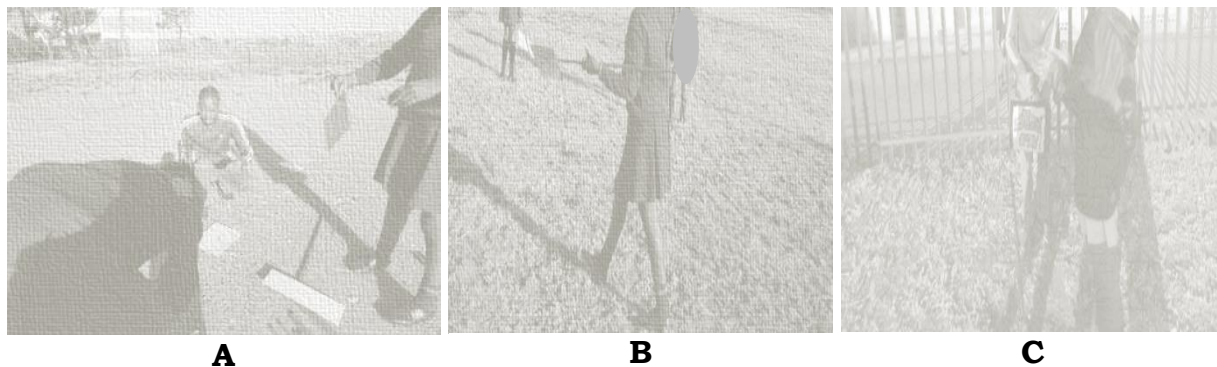
Photo 6.6: Installing boards

6.2.7   Term two reflections

Eco-school portfolio was compiled and it was assessed and passed. Therefore, the school successfully registered as an Eco-schools Programme and was awarded bronze certificate, which is in Appendix 6.1. In 2017, the school re-registered with the Eco-schools Programme and resource use theme was chosen. In addition, the process of designing litterbins took us about five working days. It was challenging and required technical skills. Hence, we requested grounds men to assist us to create 10 litterbins and for installation. After its completion, we positioned these litterbins strategically in front of each block to reduce the distance travelled by learners to litter and empty classrooms' litterbin regularly. Mathe (2014: 70) asserts that people in many cases are lazy to walk for a long distance looking for a litterbin to dispose of the waste. Therefore, many litterbins can lead to decline in littering. One litterbin was installed at the food court so that learners can throw food remains inside the litterbin. Lastly, one litterbin was installed at learners' entrance/exit because usually learners drop unwanted items on the ground as they leave after school.

Moreover, trees planted were donated by a company called Eco-cycle as part of celebrating Earth Day with the school. Teachers and learners planted trees but after that, co-researchers did the watering. Learners and teachers were not engaged in environmental activities. In addition, each co-researcher gave his/her tree a name. Their names revealed love for plants and sense of ownership. The sport field where trees were planted was also given a name. Co-researchers again were engaged in painting litterbins and some of them have never performed such an activity before. A SEC member joined co-researchers while painting litterbins to encourage other teachers to tackle littering. A brown and fawn colour was used to match learners' uniform. This was meant to bring these litterbins closer to their hearts. As much as they love their uniform, perhaps this could translate into loving litterbins and make use of them in turn to reduce littering. After we painted litterbins, it was observed that some learners took photos next to the litterbins. This suggests that decoration of the litterbins attracted their attention.

6.3   TERM THREE

Term three was the last cyclic process of addressing littering with collaboration of co-researchers. EAR activities are meant to stimulate learners' awareness towards littering. Preliminary analysis from term one and two informed term three EAR activities.

6.3.1   Crocheting

Photo 6.7 shows the co-researchers crocheting mats with plastic bags using an instrument called a crotchet. Co-researchers brought plastic bags from home as shown in Photo 6.7A. Each co-researcher was involved in cutting the plastic bags into small lengthy pieces as indicated in Photo 6.7B. Afterwards, we joined these pieces together and rolled them to control it when we started to crochet. Photo 6.7C illustrates co-researchers' crocheting. Two co-researchers taught us how to crochet as their parents' crotchet mats and other artistic work at home with plastic bags and wool. As a result, those co-researchers

facilitated the whole process of monitoring us to check if we crocheted correctly. For some of the co-researchers, it was the first time they were involved in an activity with me. Co-researchers were paired into two members per group with me while two co-researchers facilitated the activity. One co-researcher mentioned, "I never thought I will ever carry out this task because usually I see my mother crocheting. So I thought crocheting is done by women only but I am happy to be part of this team since I am learning new things".

It was a tricky but fun activity and at the end, mission was accomplished as shown on photo 6.7D and this mat was made with plastic wrappers dumped by learners on the ground. This activity intended to teach co-researchers about three Rs (reuse, reduce and recycle) of plastic bags and make them aware of littering. Moreover, it empowered co-researchers as they could pursue a career and business venture to design mats and other artistic work with plastics and sell these product to survive in future. In addition, Das (2014) echoes the same sentiments that co-researchers will understand that they can personally play an important role in reducing plastic pollution and increasing recycling rates for a healthier environment.

| A | B | C | D |

Photo 6.7: Crocheting

In addition, Photo 6.8 shows co-researchers cleaning the lab after they have completed the activity. This activity achieved its objective of sensitising co-researchers towards cleanliness.

Photo 6.8: Co-researchers sweeping

6.3.2 Class competition

The introduction of the class competition activity involved Grade 8 to 11 learners and excluded Grade 12 learners because volunteers daily clean their classes. This competition was introduced after some of the co-researchers complained about the status of their class. One co-researcher stated, "We don't have cleaning roster and SEP in our class and our class is always dirty. Our class teacher does not care because some of the learners when asked to sweep they refuse". I engaged teachers during staff meeting held on 17/08/2016 to discuss the initiative and it was highly praised. Class managers were requested to inform their classes about the competition. Each grade level was awarded cleaning material including 5L pine gel, 5L bucket, 2kg floor polish, two brooms, and one mob. The overall winner received a voucher worth R500, 00. This initiative was to encourage school learners and teachers to maintain cleanliness in their class and around the school, and to infuse a sense of ownership.

Two photos depicts one of the classes before (6.9A) with littered items visible on the floor and dusty, and after class competition (6.9B). After the competition, the class was well organised and with charts displayed on the board and SEP pasted on the wall. However, photos taken from different directions but the

common feature is represented as indicated by a circle painted black on both photos. This shows some improvement since commencement of the competition. What seemed to be interesting about this class was that some of the co-researchers were part of it.

A   B

Photos 6.9: Class competition

6.3.3 Celebrating Arbour Day

In this activity, co-researchers celebrated Arbour Day by planting flowers, a day on which schools and other organisations in South Africa plant flowers, trees and so forth. The following three photos represent different scenarios. Photo 6.10A shows an area within the school with no flowers on it before plantation. On the contrary, photo 6.10B shows co-researchers involved in planting flowers. Conversely, photo 6.10C shows the area with flowers and some vegetation. It was the first time that some of these co-researchers were engaged in such an activity. Some of the co-researchers mentioned that they had never celebrated Arbour Day before, and thanked me for giving them the opportunity to do so.

One co-researcher mentioned, "The school should encourage learners to bring flowers on this day to beautify the school and this could teach us to know about environmental days". In this school, flowers are only planted at the administrative block. At this school, it was evident that the focus is on indoor learning, but the outdoor activities seemed to heighten the learners' awareness

of environmental issues, among them, the scourge of litter. The celebration of Arbour Day at the school was intended to raise co-researchers' awareness towards plants and littering and to link indoor and outdoor learning processes.

| A | B | C |
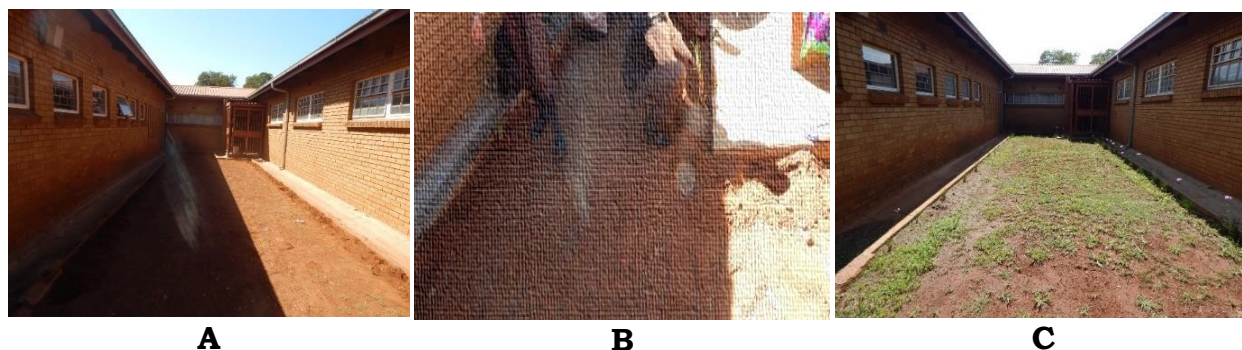
Photos 6.10: Arbour day

6.3.4 Making manure from waste materials

Photo 6.11A shows co-researchers carrying boxes and buckets containing vegetable waste materials collected from the school's kitchen and are thrown down as indicated on the photo. These materials are taken from the kitchen daily to make manure for the garden. Comments such as "besides learning how to make manure I'm also learning ways of saving money as we don't buy manure from the shop but we utilise garbage materials". Rubbish is free and a powerful visual tool (McEwen, 2015: 101). Another co-researcher stated, "By collecting these waste materials, we are also teaching ourselves and food handlers' ways of disposing vegetable waste in an environmentally friendly manner". It was observed that food handlers throw waste materials from the kitchen to the dumping site in the schoolyard. A study conducted within the field of life and consumer science by Sibanyoni, Tshabalala and Tabit (2017) found that food handlers lacked the knowledge, awareness and attitude on many important microbial food safety hazards. In turn, this perhaps translated into their negative behaviour of disposing waste incorrectly.

Because of their actions, we informed grounds staff and food handlers to keep waste materials safe. We collected waste every day and dropped these items within the garden yard. Thereafter, the process of making manure started. After throwing the waste in the garden yard, we placed soil on top of it so that they can decompose as shown on photo 6.11B. Furthermore, photo 6.11C shows co-researchers executing the process of mixing soil with decomposed waste. After this process, co-researchers applied manure on seedlings as shown in photo 6.11D. This environmental activity was directed to teach co-researchers about compost making and the three Rs, showing them how to reduce litter by re-using organic waste.
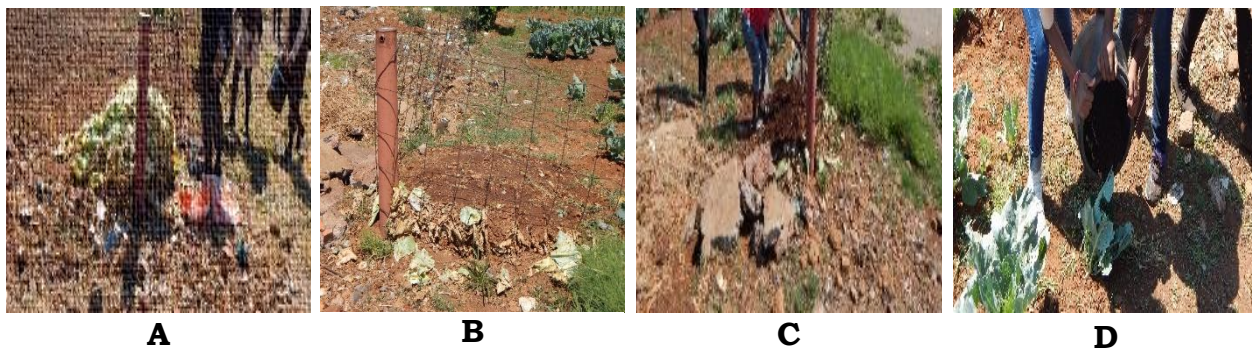
A   **B**   **C**   **D**
Photo 6.11: Making manure from waste materials

6.3.5 Drawing litterbins

Co-researchers suggested that we first draw the structure on paper and trace it on the litterbin with the help of Design learners in Grade 10. A co-researcher suggested, "tracing this structure on the litterbins will help us to avoid making mistakes and to complete this activity much faster". Litterbins were drawn using two different paint colours comprising white and black, and with brush. However, these colours did not have a meaning as compared to previous colours mentioned above. The structure drawn on the litterbins was first drafted on the charts to trace it on the litterbin as indicated on the photo 6.12A. Co-researchers were divided into two members per group to draw litterbins. Co-researcher indicated, "It was nice doing this activity because

usually I make drawings inside my exercise book but now drawing this on the bins I was overwhelmed and when I look at these litterbins I still can't believe we produced such beautiful drawings". This EAR activity was to make the litterbin attractive, decorate school and to influence school learners to make use of the litterbins. Photo 6.12B shows tiles on the ground washed off muddy that seemed to imply that grounds staff was also influenced by EAR activities.

A   B

Photo 6.12: Drawing litterbins

6.3.6   Emblems attached on school walls

This activity involved the process of designing the emblem using lids removed from drums on 6.2.2 after poem initiative was obstructed. The reason behind using lids was to teach co-researchers about three Rs. Co-researchers washed off oil and dust on the lid using a brush and afterwards co-researchers started painting the lid with a white colour and drawn with black colour. Photo 6.13A shows a location before without an emblem while photo 6.13B with an emblem placed on the wall. A message was written on the board and with hands holding the earth at the centre of the emblem. Two hands holding the earth on the emblem represent that we should respect environment because it is delicate. Emblems were put strategically next to learners' toilets entrance and taps so that learners read the message right through. One co-researcher indicated, "Since we have started with this project I have noticed that we have been utilising discarded objects. I never thought lids removed from the drums

could be turned into emblems. Thank you sir for opening our eyes". The aim of this emblem was to draw an everlasting impression and instil the motive behind the preservation of the environment. Msezane (2014: 69) reiterates that visibility of posters campaigns in the school could be important to reduce the spread of littering.

A   B
Photo 6.13: Emblems attached on school walls

6.3.7   Term three reflections

We conducted the activity of crocheting artwork using plastic bags after school to emphasise three Rs intending to conscientise co-researchers against littering. Two co-researchers guiding fellow co-researchers and myself facilitated the whole process. Co-researchers were happy after they have completed the task since they have learnt the process of crocheting. In addition, co-researchers, SEC and I observed classes separately. The intention of this approach was to compare our observations in order to choose winners per grade and the overall winner. Observation schedule in Appendix 6.2 was used to assess classes weekly. It was also observed that this school does not celebrate environmental days. As a result, Earth and Arbour Day were celebrated as a way of conscientising learners in the school to respect and love plants and to appreciate their immediate environment by not littering.

Co-researchers used waste materials from the kitchen to make manure. After commencement of the activity, food handlers and grounds staff started to place

waste material within the garden yard that implied that the initiative raised their awareness. Moreover, co-researchers learnt the process of making manure. This approach was another way of saving money and reducing littering in the school. In addition, co-researchers also drew litterbins working together with Design learners and this activity showed their creativity. The activity took co-researchers about two weeks for its completion. Furthermore, we used lids removed from the drums during the process of designing litterbins to design emblem. This was done to emphasise three Rs and raise co-researchers' awareness.

6.4   SUMMARY OF THE TERMS

Cyclic process of conducting EAR activities was done in three terms comprising term one, two and three. Continuous learning circles in this study had three cycles. The process involved four steps consisting of planning, action, observation, and reflection. However, observation formed part of the whole process since I was observing throughout the study.

It was evident in this study that critical theory transformed and emancipated co-researchers with environmental action competence and knowledge to confront environmental issues such as littering in their context. EAR activities raised co-researchers' awareness of littering. These activities covered vast psychological issues that might have influenced learners to litter the school. For instance, the litterbin is far and ugly. Mathe (2014) found the condition of the litterbins as another factor that contributes to an untidy environment. Therefore, we painted and drew litterbins addressing some of the psychological aspects. All EAR activities were hands-on and intended to address littering. Learners' attention can be caught via practices that involve environmental problems they face or may face in their region (Simsekli, 2015: 226) as stated before. In turn, this could foster good environmental habit. Habit plays a role in taking part on environmental activities (Barr, Shaw & Coles, 2011).

Moreover, co-researchers were engaged in vegetable garden throughout the cycles. This included preparing the land for cultivation, fertilising the soil, cultivating and watering. This activity reached its objectives of bringing co-researchers closer to the environment based on their comments and conduct. In addition, the activity stimulated the co-researchers' willingness of setting up the garden. Co-researchers took ownership of the seedlings in each row and they were competing among themselves, which made them to love the garden more than before. These activities streamed from cycle-to-cycle and activity-to-activity in a cyclic process reiterating to improve learners littering behaviour. Observations and comments resulting from these activities are documented in my research journal.

These EAR activities conducted in collaboration with co-researchers at school achieved three criteria of critical theory. As these EAR activities explained the issue that confronted co-researchers, offered practical solutions and transformed the situations. Theory and practice was positioned in a dialectical relationship where each is dependent on the other (Tooley, 2000). In the following section, I now discuss EAR activities at home.

6.5 ENVIRONMENTAL ACTION RESEARCH ACTIVITIES AT HOME

EAR activities at home were conducted with co-researchers to raise their awareness of littering. Co-researchers were given activities to perform and the progress was observed when co-researchers send photos on WhatsApp and when I visited their families. Below I discuss EAR activities conducted at home.

6.5.1 Crocheting

On this activity, co-researchers used plastic bags and crochet instrument to design these creative tasks as shown in Photo 6.14. This activity put emphasis on three Rs aspect and raised their awareness about litter issue and other environmental issues resulting from the incorrect disposal of plastic bags. "I struggled with this activity because I had to ask assistance from my

grandmother to teach me how to crochet and I had to request plastic bags from neighbours to complete my mat" co-researcher said.

Maroon family   **Tan family**   **Navy-Blue family**
Photos 6.14: Crocheting

6.5.2 Environmental campaign

This activity is discussed in details on 5.4 section.

6.5.3 Vegetable garden

For this activity, I bought three drums. I requested the sales person to cut these drums so that each family receive half drum and one package of seeds to cultivate. After receiving half cut drum, it was filled with the soil and the process of cultivation began. The notion behind this activity was to influence co-researchers that disused objects can be used for environmental activities and positive use of three Rs. Furthermore, the activity was intended to make co-researchers aware that though they do not have enough space within their yards, other avenues can be explored to start vegetable garden and other environmental activities.

6.5.3.1 Navy-Blue family*

Photo 6.15A shows empty half cut drum while photo 6.15B shows half cut drum with seedlings inside. Rats and birds posed a threat to the garden because at first they ate the seedlings. This cultivation was carried out for the third time. Their garden now seemed to grow without any disturbance. Co-researcher mentioned, "I am very thankful to have started this project with you

Sir. At home we now have the garden and the spinach; we have harvested it was so nice".

A   **B**

Photo 6.15: Navy-Blue family vegetable garden

6.5.3.2 Tan family*

The co-researchers were reluctant to start this activity. He mentioned, "I don't have spade and wheelbarrow to dug up soil on the street and fill up this drum". Weeks later, he started the process of cultivating as shown photo 6.16B. Photo 6.16A shows empty half cut drum with a piece inside that was cut from it. Conversely, in photo 6.16B, the drum now is filled with soil and the process of cultivation has started with visibility of small seedlings.

A   **B**

Photo 6.16: Tan family vegetable garden

6.5.3.3 Maroon family*

Photo 6.17A displays a half cut drum standing on the ground. Photo 6.17B demonstrates the drum placed on top of bricks and with cabbage and pepper seedlings. This activity achieved its objectives of growing seedlings inside the disused object. The co-researcher mentioned that "my grandmother was happy when you brought this drum because usually she would ask me to go with her to water the garden at Tseko* Secondary School and I will just come up with excuses. But now I have the garden here at home so I can't excuse myself but nurture the garden".

A   **B**
Photo 6.17: Maroon family vegetable garden

6.5.4 Celebrating Arbour Day

Co-researchers received flowers as part of celebrating Arbour Day at home on the 01/09/2016. The aim of planting flowers at home was to link school and home activities and to raise their awareness towards the environment. Flowers were watered with used water as a way of saving water and to emphasise three Rs. Family decision making is crucial because behaviour change is central to achieving rational domestic water consumption (Keramitsoglou & Tsagarakis, 2011).

6.5.4.1 Navy-Blue family

As part of celebrating Arbour Day, the co-researcher planted flowers as shown in photo 6.18B while photo 6.18A displays bare area with little vegetation. This seemed to have achieved its objective as flowers are now cultivated. "Whenever

I take a bath, I pour water inside the bucket to cool it down and later I irrigate flowers. I love rose Sir; so, if you have them please bring them when you come for next visit", said co-researcher.

A   B
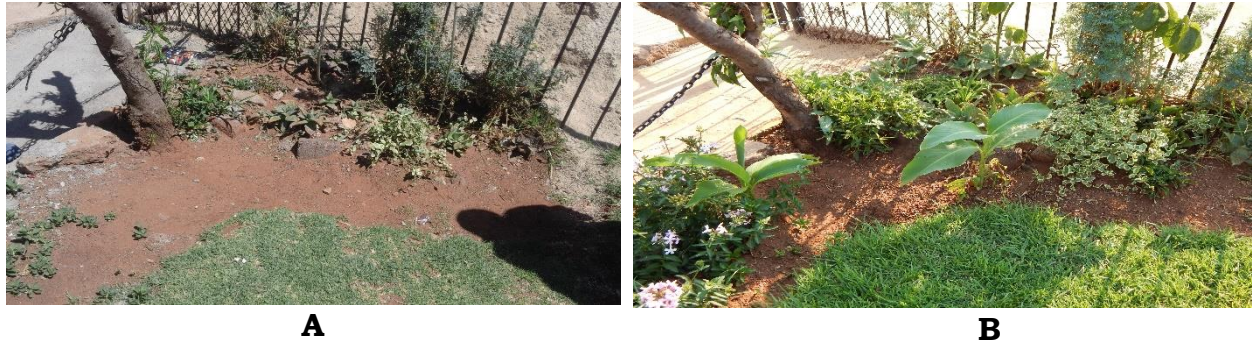
Photo 6.18: Arbour Day

6.5.4.2 Tan family

Photo 6.19A shows an area before plantation of flowers and with some littered items on the ground and a board hanging on the fence. Photo 6.19B below shows flowers after they were planted on the ground. This shows improvement of raising co-researchers' awareness towards importance of flowers. However, the co-researcher did not separate the flowers when planting them. Co-researcher indicated, "It was difficult to plant the flowers because it was hard to dig the ground since we don't have spades at home but I used steel pole".

A   B

Photo 6.19: Arbour Day

6.5.4.3 Maroon family

This family did not carry out the activity stating that they do not have space to plant and their dog will destroy flowers.

6.5.5 Making manure from waste materials

The process explained above on term three section under 6.3.4 was linked with this activity. After we made manure, we shared the compost with co-researchers so that they fertilise their garden at home. One co-researcher indicated, "thank you guys for sharing manure my garden now is blossoming". Another co-researcher mentioned, "My mother was surprised when I arrived at home holding containing mulch and I told her this is compost to fertilise the garden". Moreover, co-researchers made their manure at home, as they took residuals in the washbasin and poured inside bottles to decay and then fertilised their garden. This was to encourage them to use waste materials at home to make manure and in turn to nurture their awareness of littering.

6.5.6 Summary of environmental action research activities at home

One co-researcher out of five EAR activities at home completed four as stated above. Co-researchers crochet two similar task of designing mat and another co-researcher designed hat and thus showed their creativity and willingness to learn.

Co-researchers' parents/guardian were happy to see co-researchers involved in such activities, comments such as "Mr Mashiloane you are doing a great job with our kids because our children at school they are no longer engaged in hands-on activities such as needlework like we used to during our school years". Again, one of the co-researchers' aunt mentioned that "when you brought this drum, I thought it was just a waste of time and even thought you were playing at the beginning but now I see the results. We even harvested the spinach thus far, thank you very much for bringing this drum". This was an indication that EAR activities seemed to have an effect on family members and

co-researchers. They started the gardening process, watered the garden, fertilised the soil, continued to harvest, and cultivate. One of the learning models that can instil EA is by having outdoor learning (Amini, 2015: 44).

In addition, co-researchers celebrated Arbour Day at home as another approach of linking home and school activities and further to develop their awareness of the importance of flowers and plants in our live. Trees provide people with oxygen while people provide trees with carbon dioxide. The process of making manure was to conscientise co-researchers of making use three Rs of waste materials. In this study, co-researchers learned to transform contradictory experiences into more life-enhancing experiences (Whitehead & McNiff, 2008). The intention of emancipating co-researchers to deal with littering was realised through living paradigm. In the next sections, I examined data collected from other research instruments.

6.6   OBSERVATIONS CONDUCTED

I have conducted a field observation at home and school with the intention to explore activities that happen within these institutions. This was meant to supplement other data collection methods.

6.6.1   Observation at home

Observations at home were directed to collect data that explore the effects of household practices on co-researchers' awareness towards littering.

6.6.1.1   General activities

Licy, Vivek, Saritha, Anies, and Josphina (2013: 148) echo that the hygiene of the child starts at home by keeping the yard and house clean. Children learn covertly from their parents' actions, cleaning of their rooms and yard, and washing their dishes after meal and other chores. Common sense tells us that the mundane contexts of everyday home life are embedded in family routines and habits. These include parenting practices, life histories and functional

relationships that will significantly shape how the offspring, or children, respond to those educational interventions at school (or in the community) devised to increase environmental knowledge, change attitudes or modify specific behaviours (Payne, 2005: 81). I have observed that activities among families vary but their activities had a commonality, which include cleaning, cooking and washing.

6.6.1.2 Environmental learning

I noticed that above stated activities are more focused on household chores. In turn, EAR activities were conducted with co-researchers at home to ensure they are engaged in environmental activities besides household chores. However, these activities infuse environmental learning. For instance, cleaning of the house eliminates untidiness and health issues. The significance of keeping the milieu clean lies in the reduction in diseases that could be caused by waste disposed in the wrong place (Msezane, 2014). Furthermore, Shilpy (2012) reveals that the more cleaning of house of the respondents, the more would be their EA. While washing of dishes, clothes and hands address hygiene aspects, this could raise co-researchers' awareness against cleanliness. Cooking deals with hygiene issues, such as washing hands before and after preparation of foodstuff. Hand washing prevents diseases (Mech & Ojah, 2016).

6.6.1.3 Availability of litterbins

On average, families observed to have sufficient litterbins, with one situated inside the house usually in the kitchen and another outside the house. However, quite a number of families had litterbins situated outside the house. Proper litterbins were used though others used buckets inside the house. In turn, garbage was thrown inside the litterbin but in some families, litter was noticeable on the ground. This made their yard to be partially clean as shown on section 5.4 in Chapter Five.

6.6.1.4 Awareness

It was observed that some of the tossed items on the ground results from family members' actions and other items results from *"…foreign items are flown/blown in to the yard…"* indicated by interviewee. Such items include papers, plastic wrappers, bottles, bread tags, lids, stalk sweets, and other items, which litter their vicinities. Because of that, EAR activities were implemented to conscientise co-researchers towards littering. After EAR activities were implemented, they have achieved its goals as littered items were reduced on the ground (see section 5.4 in Chapter Five).

6.6.1.5 Household chores

The yard and house are kept clean by adults including mothers and other family members. Children at home do clean but not regularly as revealed by the interviews, questionnaire and observations. As adults takes the responsibility of cleaning at home and this approach denies children an opportunity to engage in household chores and environmental activities habitually. Consequently this leave huge gap among children to take responsibility of cleaning their mess, which could lead to developing negative attitudes towards cleaning and littering behaviour. EAR activities after they were implemented have achieved its goals as littered items were reduced on the ground (see section 5.4 in Chapter Five).

6.6.1.6 Observation analysis at home

General activities at home infuse environmental learning though co-researchers are rarely engaged in these activities. These activities have little impact on co-researchers' awareness with reference to littered items within their yards and leaving their shoes and other items on the floor lying disorganised. *"A parent complaint about her children leaving plates dirty inside the washbasin after they have consumed their food"*. In addition, despite the fact that they have adequate litterbins, litter does occur at home. EAR activities were implemented at home to ensure co-researchers are regularly engaged in

household and environmental activities. This was done to close the gap since co-researchers perform activities rarely and raise their awareness of littering. Their awareness and the gap improved with reference to photos on section 5.4 in Chapter Five. One co-researcher mentioned, "I used to leave litter on the ground but now I pick them up and throw in the litterbin".

6.6.2 Observation at school

Field observation was conducted to find evidence that point out effects that school has on co-researchers' awareness of littering. During the research journey, I was observing learners' daily during school hours that include in the morning when they arrive, during breaks, when they change periods, and after school.

6.6.2.1 Main activities during lunch

Girls and some boys play indigenous game called an ovi[2] and this game has been played for decades. These learners used discarded plastic bags tossed on the ground to make a tennis ball. Their approach has two benefits which is keeping their body healthy and to reduce littering. This game also forms part of environmental activities, as this approach covertly improve learners' EA of littering and three Rs aspect. On the other hand, mostly boys play football-using litterbins as goal pole. This appeared to suggest that learners do not know the purpose of litterbins as they leave these litterbins on the spot after playing for grounds staff and volunteers to pick them up. These two photos show learners playing during lunch. I made these photos to be blurred to disguise learners' identity.

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[2] Ovi is township slang for an indigenous game played by more than three people. Three people stand in a row. The two on the outside toss a ball/round, lightweight object at the person in the middle who has to duck. If the ball touches her/him then s/he is eliminated and another player moves to the centre. The process is repeated until everyone has had a turn.

Photo 6.20: Learners playing

6.6.2.2 Type of food bought and consumed

Learners in the school consume different foodstuffs on a daily basis. These foodstuffs are bought at school tuck shop, from fellow learners and vendors, and others bring their lunch bag. Their foodstuffs can be categorised into four, namely, fruits, snacks, drinks, and fast food. Plastic wrappers contribute towards littering cover these foodstuffs. In addition, the school-feeding scheme has their own menus offered on different days and learners tend to toss food remains on the ground. When I asked some of the learners why they dropped food on the ground they indicated as follows, "The food was tasteless", "food handlers dished up more", "porridge with fresh milk not edible". Silo (2011: 198) affirms that children who lamented that the food was not properly cooked threw a considerable amount of food away.

6.6.2.3 Location where learners consume their food

Learners consume their food in different places within the schoolyard, namely, in and outside classrooms and food court. Learners use these places owing to their friendship network since they are in different grades. Consequently, these areas are constantly left dirty afterwards. In an attempt to address incorrect disposal of wastes, litterbins were installed as shown on 6.2.3.

6.6.2.4 Disposal of waste materials

Food handlers and grounds staff dispose waste material incorrectly. They toss garbage on the dumping site within the schoolyard. Subsequently, grounds staff burn garbage during school contact time and "the smoke resulting from the burning disturb us in class and we can't concentrate", said co-researcher. Moreover, burning of waste contributes to global warming. As a result, we addressed this incorrect disposal by collecting the wastes daily from the kitchen to make manure as discussed on 6.3.4. In addition, learners discard litter all over the schoolyard. Learners litter classrooms and school grounds when they change periods, during breaks and after school.

6.6.2.5 Availability of litterbins

The school had about 20 litterbins that can be found around the campus. In turn, cardboard boxes and buckets are used to dispose waste in some classes. The use of cardboard boxes is a short-term solution because cardboard box can be damaged by liquid or tear apart by learners while playing or cleaning. Therefore, we installed litterbins as a long-term solution to address shortages of litterbins and learners littering behaviour as shown above on 6.2.3. "Since we installed the litterbins, our class frequently empties the litterbin," stated the co-researcher.

6.6.2.6 Environmental policy

The school did not have a SEP since from its origin as described on 5.8.3 in Chapter Five. The absence of SEP may have contributed towards littering because there are no guidelines to follow to control and reduce litter problem at the school (Makonya, 2004). Therefore, SEP could serve as a guiding document to address littering. Hence, we designed environmental policy to address littering.

6.6.2.7 Environmental monitoring tool

There was a lack of environmental monitoring tool such as litter pick up duty roster to address learners' littering behaviour. On the contrary, the school has duty roster to monitor latecomers, learners' toilets, playgrounds, and kitchen. Owing to lack of environmental tools, we then attached emblems on the wall to conscientise learners against littering (see 6.3.6).

6.6.2.8 School daily routine

School daily routine involves sweeping of classrooms by learners and volunteers. In certain classes, learners sweep their class after school. Others sweep their classes the following day in the morning before commencement of the lesson while other classes are left dirty. The cause of leaving classroom dirty is that other learners want to be paid to clean their classes. Grounds staff and volunteers clean school campus and Grade 12 classrooms on a daily basis. As a result, we then introduced class competition to encourage learners and teachers to keep their class clean daily (as discussed on 6.3.2).

6.6.2.9 Observation analysis at school

I observed throughout the study to gain in-depth data and insight. The school was found to lack programme or control measure to combat littering behaviour and hygiene issues among learners. Absence of litter pick-up duty roster, inadequate litterbins and lack of environmental campaigns has contributed to learners littering behaviour. In addition, plastic wrappers cover a number of items learners buy in the school. Furthermore, the school relies on grounds staff and volunteers to keep the school clean. Vendors are also robbed in during lunch to clean the school. Therefore, learners continue to litter freely without shame. Nevertheless, since EAR activities were implemented, they have raised their awareness and reduced littering in the school. The following section interprets data from journal writing.

6.7   INTERPRETATION FROM THE JOURNAL WRITING

This instrument was used to record daily events and activities unfolding in the natural setting. I was noting extra elements of the study because journal writing is flexible as other instruments had limitations.

6.7.1   Family communication

Family communication refers to conversation among family members. In addition, family communication was observed to be one of the methods that members use within families. Open and transparent basis of honest and regular communication in the home could reach co-researchers (Payne, 2010). One parent said, "I always remind her to irrigate the garden as sometimes she rushed to play with their friends and forget to water the garden". Therefore, family members pressured each other through communication (Dyck, 2012: 107).

6.7.2   Common practice

The practice of placing materials on top of the shack and house roof is a common phenomenon among families. Placing of such materials aimed to "protect the roof during windy and rainy seasons" but this practice in turn makes the house or shack roof to be disorganised. Further, this practice could have influenced children to litter as they see misplacing of unused items to be normal practice on daily basis.

6.7.3   Burning

Burning of waste material is practised at home and school as a way of disposing waste. As municipality collects waste once in a week, as a result some families and the school opt to burn the waste. This approach of disposing waste improperly might have impact on children littering behaviour. As a result, EAR activities were conducted in order to turn waste materials into manure and plastic bags to design artwork.

6.7.4 Classroom environment

It was noted that charts were lacking in most classrooms. Littered items are tossed on the floor and attached on the walls and chewing gums were attached underneath tables and on the walls. Furthermore, learners' and some teachers' desk were disorganised. While I was taking photos in a certain class, learners mentioned that I should capture their teachers' desk because it is messy. Disorganised classes were littered more than well-organised class. Some classes do not have SEP and environmental calendar as learners or class teacher removed them and did not paste it. After the introduction of the class competition, some classrooms improved as shown on 6.3.2.

6.7.5 Punishment

Teachers instruct learners to clean their classrooms when they do not complete their tasks and make noise during lessons. The approach of punishing learners to clean does not raise their awareness towards littering as they see this approach as a form of punishment. Learners consequently see this task as hard labour and not as a learning activity (Silo, 2011)

6.7.6 Wastage

Learners waste food as they leave food remains on the ground. Hence, birds, dogs and mice are attracted to the school. In turn, these items harm these animals resulting from suffocation. Affordability of food has influence on learners as it adds on their littering behaviour. In addition, the school waste paper whenever staff meetings are called admin clerks printout communique and a register for teachers to sign. Moreover, papers are printed and pasted all over the school during trial and final examinations for Grade 12 learners as a reminder for upcoming examinations. The papers are taken down by learners and thrown to the ground, which contributes to littering.

6.7.7 Classroom rules

Classroom rules are meant to control learners' behaviour in class including littering behaviour. The learners rejecting some of these rules made some comments on the classroom rules. This implied that rules were imposed on learners. Their comments revealed lack of responsibility and indicated that learners are resistant when it comes to cleaning. Hence, other classrooms are swept in the morning or left dirty. A learner mentioned, "Some of the learners don't want to sweep especially if our class teacher do not monitor us". If learners are engaged in drafting classroom rules, this could yield positive results since other classes appeared to be clean.

6.7.8 Green practice

The practice of selling plastic bags in South Africa had influence on most household members to reuse plastic bags. In some families, it was observed that plastic bags were reused when going for shopping as shown on 5.4.1. In addition, plastic bags were used as storage container and refuse bags; interviews on section 5.5 in Chapter Five explored this fact of using plastic bags as refuse bags. This showed good environmental behaviour since visibility of plastic bags on the ground will be minimal. For example, when children go grocery shopping with parents or when parents bring groceries home from the store, the child can see the reusable grocery bags (Goldberg, 2012: 36).

6.7.9 Crocheting

In certain families, crocheting is practiced and mostly carried out by females. Materials such as plastic bags and wools are used together with a crotchet or gross needle instrument to design mats and hats. Rosdiana (2016: 471) notes that the activity of crochet is carried out as a hobby. Regardless of that, this practice reduces littering. Crocheting promotes three Rs aspect. In turn, this could raise co-researchers' awareness of littering.

6.7.10 Cleaning material

School budget 2015/2016 included a portion of money to buy cleaning materials for admin and HoDs offices. This budget excluded cleaning materials for classrooms. As a result, learners in their respective classrooms contributed money to buy cleaning materials for their classes but in other classes' teachers bought cleaning materials instead. Therefore, their efforts show responsibility. The introduction of class competition meant to encourage cleanliness and address shortages of cleaning materials as classes won cleaning materials.

6.7.11 Staff meetings

The school held staff briefings and meetings frequently. The agendas of these meetings are mainly focused on curriculum, and environmental matters are always omitted. Their emphasis on the curriculum has positive impact on the learners and this might bring change in raising learners' awareness towards littering. Utilisation of staff meetings could allow teachers to engage in ecological matters and give learners an opportunity to learn about environment.

6.7.12 Classroom cleaning roster

In certain classrooms, there was visibility of sweeping roster pasted on the wall. Learners are divided into equal groups to sweep their classes. However, other learners will leave without sweeping. Hence, they swept the following day as stated before. On Fridays, the school has shortened periods to 40 minutes to allow learners and teachers to clean their classes. This shows they are on the correct paths of raising learners' awareness against cleanliness.

6.7.13 Family rotational shift

Some families have a rotational shift to do household tasks. Family members take turns to cook, wash clothes and clean. Sometimes, children clean the house and wash dishes during weekends. Most of co-researchers come from

low-income families. So, at home they are expected to clean and wash dishes, as their parents cannot afford to hire char. Family rotational shift is a positive approach of engaging all family members in household activities and might influence co-researchers to develop awareness towards cleanliness and littering.

6.7.14 Summary of the Journal writing

At home and school, different activities were conducted to raise co-researchers' awareness of littering and cleanliness. Some practices such as cleaning roster are similar. However, it was observed that the effectiveness of their activities or practices depends on teachers and parents/guardians methodical approaches.

Classroom rules and cleaning roster have little impact on learners based on their behaviour. This suggests that learners clean their class because they fear punishment. Approach of punishing learners to clean classroom or school ground does not help learners to develop awareness. Lack of cleaning material contributes towards dirty classrooms and disorganisation. Moreover, school staff meetings were based on curriculum related matters. This is indication that the school focus on indoor learning.

The practices of burning garbage both at home and school have contributed on learners' littering behaviour. As they see this approach as a way proper of disposing garbage. Wastage of food and papers contributes to the burning practice. Furthermore, the practice of placing stones and other items on top of the shack or house roof perhaps has influence on children littering behaviour. The next section analyse data collected from the questionnaire.

6.8   ANALYSIS OF THE QUESTIONNAIRES

Two sets of the questionnaires were completed with co-researchers at the beginning and end of the study. They were intended to comparing outcomes after interventions have taken place in order to consolidate their outcomes with

other data collection methods. Fourteen co-researchers completed the first set of the questionnaire and the second set completed the number of co-researchers that completed the questionnaire previously declined to nine owing to withdrawals. The use of the questionnaire was to seek co-researchers' response to assess home and school practices on their awareness towards littering.

6.8.1 Demographical information

The pre-analysis showed that the youngest co-researchers were 13 and the oldest 15 years old with a difference of two years. Again, the post analysis indicated that the youngest co-researcher was 14 and oldest 16 years old. In fact, 14 years is the average age for a learner to be in Grade 8. This indicated that in 2015, a high number of co-researchers were 15 years old and in 2016, they were 16 years old. An average age of the co-researchers was 15 years old and with a high number of females. The average age for a Grade 9 learner is 15. It should be noted that I selected co-researchers randomly in their respective classes using electronic class list on my computer. Therefore, these co-researchers were selected randomly irrespective of their age and gender to be part of the study.

6.8.2 School environmental policy

The pre-analysis indicated co-researchers response, 28.57% yes; 21.43% no and 50% I do not know. This indicated that the school does not have environmental policy. In the post-analysis, all the co-researchers (100%) indicated that the school has an environmental policy. The policy was designed as part of the interventions and this is key in any AR project to come up with solutions. Again, 57% on the post analysis indicated that the policy is partially practised. This showed improvement as the school now has a policy.

6.8.3   Litter monitoring at school

The school was found to be partially clean both on pre-analysis (57%) and on post-analysis (100%). The school failed to implement litter pick up duty roster to control learners' littering behaviour. Grounds staff and volunteers kept the school clean as indicated on the pre-analysis (100%) and the post-analysis (44%). Therefore, decline from the pre-analysis show change in behavioural pattern. Co-researchers were engaged in cleaning campaign as outline on 5.8.1 in Chapter Five.

6.8.4   General daily activities at home

Two general daily activities at home were indicated, including cleaning the house, washing dishes on pre-analysis (50%), and post-analysis (67%). Therefore, these activities form part of our daily lives, as always we clean plates before and after food consummation that address cleanliness. Moreover, they performed these activities following instructions from their parents/guardians as indicated on the pre-analysis (86%) and post-analysis (100%). It appears that teachers play little role on co-researchers' daily activities as they were mentioned once on the pre-analysis (14%) with insufficient percentage.

6.8.5   Environmental awareness

Majority of co-researchers revealed that littering is an environmental problem as indicated on pre-analysis (79%) and post-analysis (100%). This finding concurs with the studies. Kärkkäinen et al. (2013: 22) found sixth graders perceived the most key environmental issues as being littering, pollution, climate change, and how much we waste. In addition, Hartley, et al. (2015) found that children recognise that marine litter is an important problem that has a negative impact on the environment, coastal industries, and human health. Learners from an environmentally polluted area are more aware and have more positive attitudes than their contemporaries from a different area (Olufemi, Mji & Mukhola, 2013). Understandably, awareness of the problem

results in attempts to solve the issue and some of the attempts included installations of litterbins.

On the pre-analysis (64%) of co-researchers indicated that they would leave littered items on the ground and post-analysis (44%) shows decline and their behaviour seemed to have changed. Interestingly, co-researchers on pre-analysis (79%) and post-analysis (67%) indicated that they do not litter. They put their food wrappers inside litterbins or school bag. It was found that learners litter the most as indicated on both pre-analysis (86%) and post-analysis (100%). Hence, the school was rated partially clean. It is evident that learners respect their home than school environment. In addition, it was indicated on pre-analysis (7%), post-analysis (78%) that school and home should be kept clean at all times, and this shows awareness towards cleanliness.

6.8.6 Education in environmental policy

Pre-analysis revealed very little about institutions that influence co-researchers to take action against littering as their responses was less than 50%. On the other hand, post-analysis (56%) indicated that environmental organisations and other, influence co-researchers to act against littering. Possibly, since the school was registered with the Eco-schools Programme as part of the interventions had effect on them. Again, pre-and post-analysis showed different results about people who tell them not to litter. The pre-analysis (64%) indicated that their parents tell them not to litter while post-analysis (44%) indicated that teachers tell them not to litter. This could imply that both teachers and parents play a role on learners' awareness.

6.8.7 Summary of the questionnaire

This section summarise findings from two sets of the questionnaires completed by the co-researchers. The demographical information of the co-researchers showed that the study had more females and 15 years old after other co-

researchers withdrawn from the study. It was further revealed that the school did not have SEP. Subsequently, we designed the policy but it was partially implemented. Partiality of the policy and lack of litter pick up duty roster that was not implemented have contributed towards learners' littering behaviour because school was found to be partially clean. In turn, the school was kept clean by grounds staff and volunteers. Consequently, this adds to learners littering behaviour. For instance, teachers do not supervise litter activities in turn learners drop waste anywhere on the ground (Makonya, 2004: 60).

Most performed activities at home include cleaning the house and washing dishes, which adds to environmental activities as both activities address cleanliness. Moreover, most co-researchers are aware that littering is a problem, as on a daily basis people intentionally and unintentionally litter the environment. Teachers and parents tell children not to litter but children were found to be most litters. This is in accordance with Muñoz-Cadena et al. (2012) who found that younger people litter more than older individuals. Therefore, the school was found partially clean. Most people do not mind to litter in public areas as compared to their own homes (Mathe, 2014: 1). Yet they agree that both home and school should be kept clean all times. Environmental organisations such as Eco-schools Programme can be utilised as they influence co-researchers to act against littering as they are engaged in environmental activities. The following section unpacks research questions.

6.9 UNPACKING RESEARCH QUESTIONS IN LINE WITH RESEARCH INSTRUMENTS

Discoveries of the study are discussed based on main research question **"How can an action research approach be used to address learners' environmental awareness effects of both home and school practices towards littering?" and with its sub-questions.** The aim was to explore the influence that home and school practices has on co-researchers' EA towards littering. Moreover, EAR activities were implemented through AR approach and

these activities added the value within the institutions. As critical theory dictates that emancipation should be at the centre of the project. Data presented above highlighted practices that could influence co-researchers towards litter issue both at home and school. I then now unpack sub-questions of the study below.

6.9.1 Sub-question 1: How can the home and school serve as institutions to shape up learners' environmental awareness regarding littering?

This question aimed to find the role that home and school could play to raise learners' awareness of littering. At home most activities conducted include household chores and with few environmental activities. These activities has potential to raise learners' awareness of littering as revealed by observations, journal writing, questionnaire and semi-structured interviews. Such practices/methods include usage of litterbins, cleaning/sweeping of the classroom or house and yard, communication, green practice and crocheting. It was evident that home and school can shape learners' awareness if learners are frequently engaged in environmental activities and household chores.

Nonetheless, these practices are tainted by teachers/parents environmental knowledge and action. As it was indicated from the interviews, journal writing and interviews, some comments such as "Some of the learners don't want to sweep especially if our class teacher do not monitor us". A parent from the interviews indicated, "I normally pick them up and put them in the litterbin then later I would find them outside the yard. Still it does not make any difference, then a day later after picking them I find more plastics". The implementation of EAR activities both at home and at school gradually changed co-researchers lack of enthusiasm to frequently engage in household chores and environmental activities. This was done through constant communication and four cyclic AR process of planning, action, observation, and reflection. Photographs presented above shows the success of EAR activities.

6.9.2 Sub-question 2: To what extent do the home practices and school activities contribute on learners' environmental awareness with regards to littering?

For this question, I intended to explore the extent home practices and school activities shape learners' awareness towards littering. Research instruments revealed different activities conducted at home and school. The activities can be categorised as environmental activities, approaches and household chores. An environmental activity includes cleaning, usage of litterbins, green practice and crocheting. Approaches encapsulate of demonstration, communication and supervision while household chores comprise cooking, washing clothes and dishes. The extent of these activities/approaches on learners' EA had minimal impact with reference to photos displayed above before interventions were implemented.

Moreover, pre-analysis 64% and post-analysis 44% of co-researchers indicated that they would leave littered items on the ground. Pre-analysis 50% and post-analysis 67% co-researchers indicated that they clean the house and wash dishes. The decline showed co-researchers behaviour has changed.

On the interviews, some parents indicated, "I cannot say he is environmentally literate because you know children nowadays are not responsible". Another parent mentioned, "Children of today do not listen even when you teach them. I have my kids and I wake them up, take out night urine bowl and open the windows to let in fresh air. Before one eats, they must wash their hands, faces and brush their teeth. Yet, as I said children do not listen though I keep on telling them. They like playing. They cannot even notice when one is serious because they are no longer beaten like us in our days." In addition, it was also observed that at the school there was absence of litter pick up duty roster, insufficient litterbins, and lack of environmental campaigns. This was the indication that home practices and school activities had little impact on

children. However, since EAR activities were implemented, they have raised co-researchers' awareness and reduced littering.

6.9.3 Sub-question 3: Is there any relationship between home practices and school activities that could influence learners' environmental awareness towards littering?

On this question, I aimed to explore the relationship between home practices and school activities that could influence learners' awareness of littering. I have conducted in-depth interpretation of research instruments as explained above to explore this fact. Activities/practices conducted at home and school differs. At home activities conducted encompasses cleaning, cooking, washing, crocheting, green practice, usage of litterbin and family rotational shift, and approaches (demonstration, communication and supervision). Conversely, at school activities consist of utilisation of classroom cleaning roster and litterbins. The relationship that exists in both institutions covers utilisation of litterbins and cleaning roster/family rotational shift. However, littered items can still be found on the ground. In addition, these activities are limited to ordinary practices. It is evident that environmental activities are conducted to a certain extent. Both research instruments identified two environmental activities that include crocheting in certain families and green practising. These activities are conducted at home and at school, learners are exposed to cleaning of the classroom only which Silo (2011) referred this activity as hard labour.

The implementation of EAR activities in both institutions changed the landscape at home and school. As co-researchers were engaged in environmental activities and were linked with home and school practices. For instance, co-researchers engaged in exploration of soil, wastes, and environmental monitoring tools to address littering. EAR activities indicated that it is possible to link the activities at home and school, and to involve

learners in environmental activities. The ensuing sections discuss results emanating from the research questions.

6.10 RESEARCH FINDINGS AND DISCUSSION

This section outlines research findings and discussions which results from the background of the study, theoretical framework, problem statement, research questions, and the aims and objectives of the study. I have divided the discussions into two parts encompassing home and school practices.

6.10.1 Home practices

Home general activities refer to spontaneous learning processes such as communication (verbal and non-verbal), self-exploration, imitations, rituals, and other learning processes. Residents perform domestic chores every day such as cooking, cleaning the house and yard, washing dishes and clothes, crocheting and gardening. These general activities could shape up children's EA towards littering. For instance, crocheting of mats and hats promotes hands-on activities and therefore reduces littering and conscientise children towards littering as parents pass information from generation to generation.

Awuah-Nyamekye (2014) the study indicated that indigenous ecological knowledge is a potential resource that can complement scientific means of dealing with the region's environmental problems. In this study, co-researchers were engaged in hands-on environmental activities and indigenous methods. For instance, co-researchers used waste materials such as plastic bags to crochet mats to foster EA of littering. Thus, these EAR activities and indigenous methods are effective to conscientise children about littering and other environmental issues if conduct through AR using. The main task of critical research is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light (Nieuwenhuis, 2008, 62)

Mech and Ojah's (2016) study found that there was awareness among the mothers regarding the importance of hand washing in prevention of diseases. This finding accord with the finding of this study as it was stated by some of the parents during the interview "I tell her how to dust off, wash dishes...." This was the affirmation that mothers love cleanliness and EAR activities had a role to play at home, as children are now frequently engaged in home activities as stated above. This also support critical theory stance of emancipation to the oppressed individual to develop understanding and explains rational actions establishing the ability to take more control of own lives (Tooley, 2000).

Payne (2005: 81) found that environmental learning of children is closely associated with doing practical things at home in relation to the everyday environmental problematic. This finding is in line with research instruments such as interviews (see 5.5.1.14), questionnaire (see 6.8.4) and observation (see 6.6.1.1 and 6.6.1.2) and journal writing (see 6.7.13). For instance, crocheting promotes hands-on activities and conscientise children towards littering. The incorporation of EAR activities has heightened children and family members' awareness since vegetable garden was maintained throughout this study by filling the drum with soil, watering, cultivating, applying manure and harvesting. Home vegetable garden has the potential to be a deeply embodied and meaningful experience. It also represents a form of social gardening and learning (Payne & Cutter-Mackenzie, 2009). Furthermore, it was evident that constant engagement of EAR activities facilitated by living theory and consistent communication among family members yield positive results. As it was indicated on the interviews by some parents, "I sit him down..." Another one said "...I always push them to be clean...." Strong communication between family members is clearly necessary for affective intergenerational influence to occur (Istead, 2009: 82). The success of the garden on both families was evident that communication was effective with reference on the photos above.

Aspect of three Rs was at the centre of EAR activities to raise children awareness of waste materials as part of emancipating co-researchers using critical theory. It was observed that families wash dishes on a daily basis and residuals' resulting from this was flushed down the drain. Therefore, composting is a good way to convert waste and other organic materials into useful garden mulch because it reduces the amount of litter in the environment (Ocansey, 2006).

6.10.2 School practices

Formal education is structured and organised within the educational system, and has aims and objectives to equip learners with knowledge, skills, awareness, and values that contribute to their everyday lives. EAR infused indoor and outdoor activities to supplement daily school practices to raise learners' EA towards littering. Outdoor-based learning environment showed that outdoor learning-based environmental education (EE) is effective in improving learner learning outcomes, particularly the attitude of caring toward the immediate environment (Amini, 2015).

Silo (2011) conducted her study in two phases to unpack learner participation in waste management activities at school. Phase one of her study indicated that participation of learners in waste management activities was largely teacher-directed. Phase two of her study revealed that if learners' participation is taken seriously, and if opportunities for dialogue exist between teachers and learner, positive changes for a healthier environment can be created in schools. This study also found that learners are engaged in activities that teachers instruct them to carry out such as cleaning the class as revealed from the journal writing (see 6.7.5 and 6.7.12) and observations (see 6.6.2.8). In turn, I engaged co-researchers in a collaborative inquiry to address littering to facilitate teacher-directed approach to co-researcher-researcher engagement process. Hence, EAR activities were successful, as co-researchers provided solutions such as cleaning campaign to reduce littering in the school. Some co-

researcher mentioned, "This garden besides producing vegetable but also makes us to respect the environment and learn how to plant seedlings and seeds because at home some of us don't have vegetable garden". According, Silo and Mswela (2016) corroborate that by engaging co-researchers in identifying problems and coming up with action-oriented solutions, they became co-catalysts for change in the school environment.

However, Msezane and Mudau's (2014) study found that learners continued to litter even after participation in EE as an extra mural activities. The implication of this finding seemed to put forward is that learners were not at the centre of the activities implemented. Furthermore, the activities infused knowledge based not action competence consequently did not have much effect on the learners. In this study, co-researchers were at the centre of all EAR activities and infused action competence and knowledge based to develop awareness of littering. Photographs displayed on section 5.8, 6.2 and 6.3 explored this fact. EAR activities encouraged co-researchers to use their hands and mind. This was evident when co-researchers were engaged in exploration of soil, wastes, and environmental monitoring tools. In addition, Dyck's (2012) study found that involvement in the programme led participants to engage in environmentally responsible action and helped them to identify areas that they wished to take action on in the future.

Learners spend 12 years under basic education. To be precise, learners spend seven years in primary and another five years in secondary school. Furthermore, learners spend seven to eight hours a day and five days a week on under the guidance of a teacher. Consequently, learners learn with what they see from adults. Therefore, teachers are expected to lay a solid foundation for environmental knowledge.

As pointed out by Sehlola (2007) that indoor learning activities limit learners' environmental learning opportunities. It was observed during EAR activities

that learners enjoy outdoor learning. This is confirmed by comments such as "Sir when you are free please come to our classes and request the teacher in class that we have to water the garden". EAR activities have a role to play at school to conscientise learners' awareness of littering if conducted under the supervision of the teacher. The voices of co-researchers guided this journey through my practice, presenting evidence (Whitehead & McNiff, 2006).

Educating learners at school has enormous benefits. More importantly, learners take the messages and learnt behaviours to their homes and communities and learners can influence their parents to change their undesirable attitudes towards the environment (Ocansey, 2006: 13). For instance, learners performed various activities such as planting flowers, which were linked with household practices and seemed to have an effect on their parents. Other parents/guardians requested me to help them with seeds and flowers.

6.11 CONCLUSIONS

In this chapter, I presented EAR activities both at home and school. However, quite a number of activities were conducted at school because learners spend most of their time at school. In addition, few EAR activities were done at home owing to time constraints. We conducted EAR activities after school and sometime on weekends as part of adhering to ethical matters. I provided reflections for each term and general summary. Research instruments in this study were discussed and in each instrument, I discussed the analysis or interpretations.

Research findings of the study indicated that home and school practices have limited environmental activities. Hence, both institutions influence learners' EA of littering to a certain extent. Shilpy (2012) found that majority of the people had medium EA in their daily activities. Perhaps since home and school

practices does not to have a strong relationship. The common practices that both home and school have include cleaning and roster.

The study revealed that EAR activities could be useful within home and school practices to conscientise co-researchers towards littering if approached through AR. In the ensuing Chapter Seven, I outline the summary, conclude the study and provide recommendations.

CHAPTER SEVEN
SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

7.1   INTRODUCTION

This chapter presents synopsis of chapters, recommendations, conclusions, and point put forward for future studies. Progressive action research (AR) spiral cycles are discussed based on activities conducted with co-researchers. I also provide reflections of the research study. Summary of the study are derived from the previous chapters. This chapter also concludes the study. In the subsequent section, I present research questions and discuss the synopsis of this AR study, that is, the journey I travelled with my learners as an AR practitioner and them as co-researchers.

7.2   THE RESEARCH QUESTIONS

How can an action research approach be used to address learners' environmental awareness effects of both home and school practices towards littering?

Sub-questions:
- How can the home and school serve as institutions to shape up learners' environmental awareness regarding littering?
- To what extent do the home practices and school activities contribute on learners' environmental awareness with regards to littering?
- Is there any relationship between home practices and school activities that could influence learners' environmental awareness towards littering?

7.3   SYNOPSIS OF THE ACTION RESEARCH CHAPTERS

In this study, I explored the effects of household and school practices on learners' environmental awareness (EA) towards littering through AR approach. Learners formed part of the study as co-researchers engaged in environmental

action research (EAR) activities to raise their awareness of littering. Below I highlight chapters of the study.

7.3.1 Chapter One

In Chapter One, I provided background of the study and highlighted that littering results from human activities on the environment. Therefore, economic factors add to their littering behaviour. In addition, problem statement of the study indicated that besides in both developing and developed countries embarking on green campaigns litter issue still continues. The study managed to achieve research aim and objectives as co-researchers were engaged in EAR activities to address the problem of litter issue and simultaneously to explore the effects of home and school practices towards littering.

7.3.2 Chapter Two

In Chapter Two, I debated concepts used in other fields to pave a way for me to define concepts used in this study to avoid misinterpretations and misconception. In this chapter, I allowed readers to dissect the study and be on the same understanding page with the author.

7.3.3 Chapter Three

In Chapter Three, I unpacked the study by reviewing relevant literature. I collected literature from different secondary sources, such as theses and primary sources; for instance, photos. Secondary sources revealed that littering is a problem coupled with lack of EA, which pose a serious threat to the earth and on human lives. Literature also indicated that litter problem is caused by internal and external factors such as when someone receives payment to clean the environment. Reviewed studies pointed that teachers place emphasise on learning about environment, which fails to equip learners with necessary skills to act against littering. Quite number of studies reviewed in this chapter stated that young and old people do litter regardless of their gender. Yet again,

absence of policies and lack of enforcement were found to contribute towards littering.

7.3.4 Chapter Four

I extensively discussed research methodology applied in this study. I used multiple data collection methods to ensure trustworthiness of the research findings. Data collection methods used in the study included observation grid, photos, journal writing, semi-structured interviews schedules, and questionnaires to collect data. These research instruments were considered relevant and necessary for this study as the study was dealing with littering as a social issue. These data collection methods answered the research problem by revealing practices conducted daily within home and school; the relationship among these practices and the extent these practices influence learners towards littering.

The study was qualitative in nature and applied AR approach to engage co-researchers throughout the research journey using EAR activities. I also discussed research techniques such as sample and population, ethical issues and data analysis. Fourteen learners were chosen out of volunteered group and each participant had an equal opportunity to be selected. Ways of ensuring legitimacy such as credibility, transferability, dependability, and conformability of research findings were outlined in this chapter. Lastly, this chapter discussed AR continuous learning circle including plan, act, observe and reflect, and assumption claiming knowledge within the study.

7.3.5 Chapter Five

This chapter discussed the context of the study. The school context was elaborated. This encompassed school governance, school's history, vision and mission statement of the school, partnerships, feeding scheme, curriculum, sport activities, school facilities, teachers' profile, and learner population. These aspects were linked to learners' littering behaviour.

I examined three families case studied which were named Navy-Blue Family, Tan Family and Maroon Family to disguise their identity. Interviews conducted with these families were discussed together with their photos. Inclusion of the photos was to give readers the narrative/living theory behind the scene about the significant others. Interviewing techniques were explained comprising the structure of the interviews from interviewee 1 until interviewee 13. For each interview, summaries were provided as well as the general summary of the interviews conducted with 13 families that participated in the study.

I classified challenges into two categories comprising general challenges associated with AR and challenges faced throughout the study. It was important to classify these challenges in this study for two reasons. The first reason was that I should know problems that are related to AR in general before conducting the study and secondly, to share problems experienced in the study. Consequently, this may perhaps help other scholars to review conclusions reached in the study. Some of the challenges faced within the study included intimidation posed to the co-researchers by the deputy principal.

In addition, the programme that was used to engage co-researchers in EAR activities at the school was presented and discussed. This programme was divided into terms, namely, term one, two, and three. This chapter discussed term one only to give light to the problems identified. I also elaborated reflections for term one. The subsequent Chapter Six discussed term two and three. Lastly, this chapter looked through the process of the research journey.

7.3.6 Chapter Six
In Chapter Six, I presented two school calendar terms comprising term two and three that discussed EAR activities, which build up from term one in Chapter Five. A number of EAR activities were conducted purposively to raise co-

researchers' awareness towards littering. In each term, reflections were provided for EAR activities conducted as well as summary of the terms. This chapter described EAR activities conducted at home with co-researchers. EAR activities conducted at home took place to solidify activities learnt at school or home and vice versa. Consequently, the study sought to influence co-researchers to habitually engage in environmental activities and household routines.

The data collected from data collection methods presented discussion and with its interpretation. I used observation schedules at school and home to observe activities within these institutions. I noted daily general activities/practices that could influence co-researchers towards littering. Moreover, journal writing collected data within the school and at home. This data collection method pointed out practices conducted within these institutions. Some of these practices are habitually conducted by certain families/teachers. In addition, the co-researchers completed two sets of the questionnaires. Pre-and post-questionnaires revealed different results. For instance, the school was initially found to be lacking an environmental policy but after interventions, the school had the policy.

In addition, this chapter discussed research findings in line with main question along with sub questions. Research discussions were discussed separately for home and school practices to unpack the findings for each institution. It was noted that their practices differ and influence co-researchers towards littering to a certain extent. Therefore, the study revealed that EAR activities could be useful within home and school site to conscientise co-researchers towards littering if approached through AR. Therefore, this suggests that prolonged EA activities eventually will conscientise co-researchers towards littering at the end.

7.4 PROGRESSIVE ACTION RESEARCH SPIRAL CYCLES AT SCHOOL

This section discusses activities conducted with co-researchers through cyclic process displayed on Figure 7.1. AR spiral cycles conducted with co-researchers intended to raise their awareness of littering. Several cyclic activities were undertaken with the co-researchers. These activities discussed different aspects such as exploration of soil, wastes, litterbins, and environmental monitoring tool.
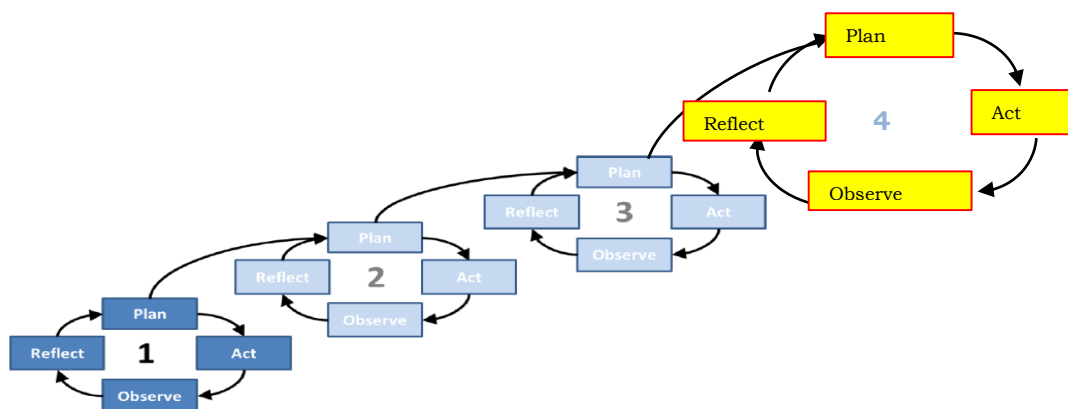
Figure 7.1: Progressive AR spiral cycles with co-researchers (adapted from Rose, Spinks & Canhoto 2015)

On the first activity, that is cycle 1, as illustrated on Figure 7.1, co-researchers were engaged in the exploration of the soil in preparation for vegetable garden and celebration of Arbour Day. The school did not have vegetable garden and co-researchers identified dumping site within the schoolyard to start the garden. The land was prepared for months by removing hazardous items and buried other items to fertilise the soil. Afterwards, co-researchers irrigated the land in preparation for cultivation. Co-researchers successfully turned dumpsite into vegetable garden as shown on 5.8.5. Co-researchers once more celebrated Arbour Day at school by planting flowers as indicated on 6.3.3. In turn, the initiative beautified the school and raised their awareness of the importance of soil and environmental days.

Figure 7.1 displayed second progressive AR spiral cycle activity to raise co-researchers awareness of wastes. In this cycle, co-researchers collected vegetable waste materials from school kitchen to make manure for the garden as presented on 6.3.4. Nevertheless, co-researchers brought plastic bags to school to crochet plastic mats, details on 6.3.1. Co-researchers managed to turn discarded paper sheets into bulletin board to name their plants for identification as presented on 6.2.6. Furthermore, a Creative Arts (CA) learner used discarded items such as cardboard box to design mortarboard as part of promoting indoor and outdoor learning activities. Subsection 6.2.1 put the learners' artistic work on show. Activities conducted in this cycle raised co-researchers' awareness towards wastes with reference to the success of the activities.

The third cycle is displayed on Figure 7.1. This is after co-researchers observed that the school has shortages of litterbins. Iron drums containers were bought and turned these drums into litterbins and installed on the school ground as shown on 6.2.2 and 6.2.3. Then afterwards, these litterbins were painted and drawn to catch learners' attention to use litterbins. These activities are displayed on 6.2.5 and 6.3.5. Then again, lids removed from the drums co-researchers created emblems and attached it on the school wall to convey a message to learners to stop littering as presented on 6.3.6. This cycle showed improvement since the school now has sufficient litterbins around the campus.

In Figure 7.1 cycle four, co-researchers introduced environmental monitoring tools that included litter pick up activities to encourage their peers to keep the school clean (see 5.8.1). More importantly, class competition was introduced to encourage learners and teachers to keep their classrooms clean. Subsection 6.3.2 details the activity. Subsequently, co-researchers wrote the school environmental policy (SEP) since the school did not have one. Appendix 5.2 stipulates the policy. The policy intended to put into action of tackling littering in the school. In addition, teachers pasted environmental calendar inside their

classrooms for learners to be aware of environmental days (see Appendix 5.3). For the purpose of sustainability of environmental activities, we registered the school to Eco-schools Programmes aimed to encourage all school members to tackle environmental issues including littering. The school was successfully registered and received bronze certificate, which is in Appendix 6.1. Table 7.1 summarises learners' activities per spiral cycle, which is developed from Figure 7.1.

Table 7.1: Summarised both learner activities per cycle

PROGRESSIVE AR CYCLE	LEARNERS' ACTIVITIES
Spiral Cycle 1	Soil exploration and Arbour Day celebration
Spiral Cycle 2	Reuse and recycling of waste materials
Spiral Cycle 3	Design and installation of litterbins from drums
Spiral Cycle 4	Introduction of litter pick up environmental monitoring tools

7.5   PROGRESSIVE ACTION RESEARCH SPIRAL CYCLES AT HOME

In this section, I outline activities conducted with co-researchers at home on Figure 7.2 through progressive AR spiral cycles to raise their awareness of littering. Cycles cover aspects such as exploration of soil and wastes, which they have to gain experience from the school activities.
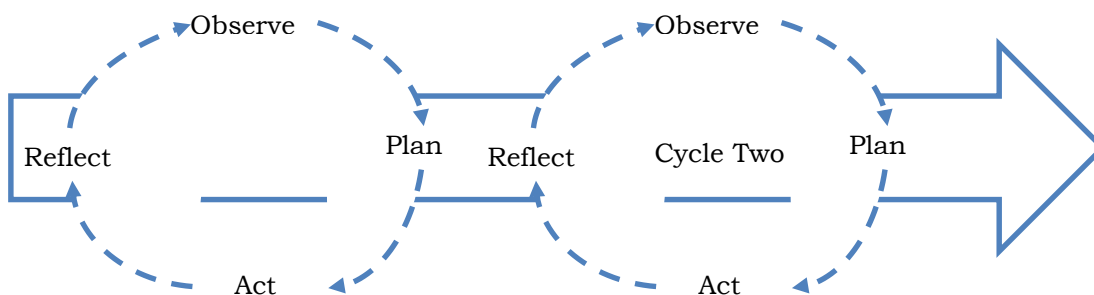
Figure 7.2: Progressive AR spiral cycles with co-researchers

The first cycle presented on Figure 7.2 co-researchers engaged in exploration of soil. Co-researchers received empty half drum and filled the drum with soil in preparation for the vegetable garden. Co-researchers watered the soil before starting to cultivate. Both families afterwards had garden in their yards as displayed on 6.5.3. Co-researchers further prepared the soil to plant flowers as part of celebrating Arbour Day at home. In Chapter Six, in 6.5.4 I presented photos exploring this fact. In general, co-researchers successfully carried out the activity of vegetable garden and planting of flowers at home. Families now have gardens and decorated their yards with flowers. However, the Maroon family failed to plant flowers.

Co-researchers on cycle two as displayed on Figure 7.2 went through the process of turning wastes into useful resource. Co-researchers used plastic bags to design plastic mats and hat using an instrument called crotchet. Completed tasks of these co-researchers are demonstrated in Chapter Six in 6.5.1. In addition, co-researchers used waste residuals and vegetable waste to make manure for their garden. Manure was used to fertilise the soil filled in the drum to nurture their seedlings. Subsection 6.3.4 depicts co-researchers engaged in the process of making manure.

7.6   SUMMARY OF THE STUDY

The study was framed within critical and living theory to explore home and school practices on learners' EA of littering because these institutions has an impact on learners either positively or negatively. Because critical researchers assert that what counts as a valid social science knowledge arises from the critique of the social structure and systems as revealed through the analysis of the discourse in society (Nieuwenhuis, 2008: 62). Children from birth interact with family members and at the later stage graduate to the education system. The latter ranges from early childhood development, primary and secondary schools to higher institutions of learning. I have summarised the research

findings under the subsections: home practices, school practices and jut overall findings. The summary therefore is outline below as follows:

7.6.1 Home practices

In general, the cleanliness of the house and yards were fairly acceptable. This was owing to two reasons: 1) children are not learning much about littering/cleanliness as it was observed that inside the house, items were misplaced and one could observe littered items within the yard 2) children who are both learners and co-researchers within this study spent most of their weekdays at school. General activities infuse environmental learning to a certain extent such as washing of dishes. Hence, littering does occur at home. In addition, household chores play little impact on children to keep their area clean and to act against littering thus leads to being environmentally illiterate.

Respectively, most families are led by females and are responsible to keep their yard clean, wash clothes and cook. Their tender care and efforts to make their children learn from their daily activities to be environmentally literate are tainted by their approach of not engaging children in those activities regularly. As a result, the visibility of unwanted items makes their homes untidy. Parents or guardians need to delegate or collectively engage their kids with domestic chores that are environmental education (EE) based to do some skill transfer.

Home education does not meet school education halfway and vice versa, since the methods that parents/guardians use at home play little role to help children to be environmentally literate as they are limited to domestic aspects though other activities infuse environmental learning. On the other hand, most homes have more than one litterbin located in and outside their house. Yet availability of bins does not influence children to stop littering.

7.6.2 School practices

I observed learners in the school throughout the study to gain in-depth data and insight because critical theory anticipated giving details and changing milieus that supress co-researchers. In general, school education processes have little impact on learners to address littering behaviour. The school does not have any programme or control measure to combat littering behaviour of learners and hygiene issues. Therefore, unavailability of litter pick up duty roster and environmental campaigns leads to continuous littering actions. A number of items learners buy in the school are covered by plastic wrappers that are dropped on the ground adds to littering.

Teachers impart unsatisfactory environmental knowledge and awareness to the learners to deal with littering. Therefore, this denies learners a lifetime opportunity to learn about environmental issues, outdoor learning activities and to engage themselves in environmental matters, for example, start environ-club. Moreover, the school relies on ground staff, volunteers and vendors to keep the school clean and the sense of responsibility fade away.

7.6.3 Overall findings

Five data collection methods comprised observation schedules, digital still photos; journal writing, semi-structured interviews, and questionnaires were used to collect data. These data collection methods showed that home and school practices have minimal impact on the learners' EA towards littering. Consequently, learners continue to litter the immediate environment without shame or guilt. The study aim was to move learners out of their comfort zone of accepting littering as norm and be conscious of learning and staying in a clean environment. Subsequently critical theory is committed to the establishment of conditions to: a) restore communicative action; b) validate knowledge through practical discourse; c) reassign behaviour to their neutral status by subjecting them to rational debate; and d) reinstate praxis (Steffy & Grimes, 1986). In addition, living educational action researcher believe that their theories

constantly need revisiting and reforming as the circumstances of their lives change, so their theories are always in a state of live modification (Whitehead & McNiff, 2006).

Since the intervention of EAR activities were implemented, learners' EA of littering started to improve with reference to photos presented in this study (see 5.4, 5.8, 6.2 and 6.3.). The results of the study show that EAR activities could be a useful practice within home and school setup. The practices of an EA will in the end conscientise the co-researchers towards littering if approached through AR.

As stated above that critical theory is considered valid only if it meets the three criteria i.e. it must be explanatory, practical, and normative which this study achieved by engaging co-researchers in progressive EAR activities at home and school. The action model that evolved through this research proved to be a tool for children to develop their participatory capacities and, especially, to gain self-confidence about their perceptions of their environment and understandings of the local issues facing them as children and adults in the future (Tsevreni, 2011: 64).

7.7   RECOMMENDATIONS

Home and school education provides a suitable platform for young people to be environmentally literate. Therefore, it is important to educate young people at grass root level to learn education about, for and in the environment. However, this could be possible if both institutions are in dialogue to shape up young peoples' education. Based on findings revealed in the study, I propose recommendations for the following institutions, home, schools, and Department of Basic Education (DBE).

7.7.1 Home

Household practices have the potential to raise children's awareness of littering. However, for their practices to be effective, family members should be empowered with environmental knowledge for effective intergenerational transfer to occur. Therefore, I recommend the following:

7.7.1.1 Indigenous practice

I encourage parents/guardians to utilise indigenous practice such as folktales to conscientise children towards littering. For instance, folktales and songs are means through which people in general transmit ecological knowledge (Awuah-Nyamekye, 2014: 53). As such, there is a Pedi song, which narrates as follows:

Swiela, swiela, swiela ngwanyana

Swiela ngwanyana

O se jele matlakaleng

Mmatswale ke tšhobolo

Tšhobolo ya mosadi

Swiela…

This song aimed to encourage people to keep their immediate environment clean. Even though this song has an element of patriarchy, it could also be applied to male counterparts to conscientise them towards cleanliness and littering. Keeping the environment clean must be everyone's responsibility.

7.7.1.2 Rotational roster

Parents/guardians should draw up rotational roster to engage children in environmental activities such as pick up litter to raise their awareness of littering. This roster could do away with the culture of relying on certain people to do tasks for them.

7.7.1.3 Environmental activities

It will be helpful for parents/guardians on a daily basis to engage children on environmental activities such as crocheting to raise children awareness towards littering.

7.7.2 Schools

Learners at school are influenced by various factors to litter or not to litter. These factors may include peer influence and teachers' environmental knowledge. Therefore, school practices should impart learners with environmental knowledge to avoid environmental degradation. Therefore, I recommend the following:

7.7.2.1 School environmental policy

Schools must formulate environmental policy to provide guidelines in order to address littering and other environmental issues. The effective implementation of the policy could reduce littering. Therefore, it is important for school members to come on board to implement and execute the policy successfully.

7.7.2.2 Environmental campaigns

Continuous environmental campaigns should be conducted to address littering involving all school members, including teachers, grounds staff and learners. Environmental campaigns will be beneficial for all school members. For instance, grounds staff instead of focusing on picking papers around the school could be used in other activities of environmental campaigns within their schools.

7.7.2.3 School timetable

Create space on school timetable to house litter pick up activities on a daily basis to raise learners' awareness towards littering. In a long run, this will reduce littering within school premises and in turn will make learners to be responsible adults in the near future.

7.7.2.4 Environmental clubs

There is also a need for secondary schools to establish environmental clubs, especially those that deal with litter. Schools must affiliate to environmental associations such as Eco-schools Programme. Membership to environmental associations allows schools to get relevant materials on litter from such organisations. These literature materials can be used by schools to raise EA (Makonya, 2004).

7.7.2.5 Environmental competitions

Schools can organise class competition and other environmental activities to raise learners' awareness on littering. Environmental competitions may possibly ameliorate litter issues in schools as school members are afforded a platform to contribute their ideas in a competitive manner, which thus improve school environment.

7.7.2.6 Environmental days

Schools must celebrate environmental days as this gives learners and teachers a chance to engage in environmental matters and offers outdoor learning which could conscientise learners towards littering.

7.7.2.7 Vegetable garden

Schools are encouraged to setup a vegetable garden since it has the potential to raise learners' awareness of littering. A vegetable garden denotes a continuous environmental activity, from setting it up, watering, putting manure on the soil, cultivating, nurturing seedlings, and harvesting. Therefore, it promotes a sense of responsibility and enhances environmental knowledge at the same time.

7.7.3 Department of Basic Education

DBE is responsible for restructuring school curriculums. Consequently, the success or failures of the curriculum are solely responsible to take the flaws or

credits. Therefore, the South African education system has been reviewed numerous times. The review is necessary in education to keep abreast with modern world. This study recommends the following to DBE:

7.7.3.1 Inclusive curriculum

Inclusive curriculum should infuse modern and indigenous education to sustain knowledge gained at home and/or school to raise learners' awareness of littering. Since household and school education have a vast gap towards conscientising learners towards littering, inclusive curriculum will impart effective environmental knowledge to the learners and develop awareness of littering.

7.7.3.2 In-service training

In-service training should be offered to teachers to improve their environmental knowledge and skills in order to deal with littering within the schools. Persistent of littering in schools shows teachers' lack of environmental skills to tackle littering and making it to be outdated.

7.7.3.3 Deploy environmental educationist to schools

Teachers are currently drowning with subject content to deliver and assessment tasks to mark. Hence, it will be helpful for the DBE to deploy environmental educationists to schools to assist in arranging environmental activities that addresses littering. Since it was noted that teachers regularly assess learners, it was also noted that their continuous assessment tasks are limited to chalkboard activities (Simalumba, 2011) and examinations (Kanene, 2016; Kimaryo, 2011).

7.8 POINTS PUT FORWARD FOR FUTURE STUDY

The study was conducted with small sample in one school and at a particular province. Therefore, the research findings of the effects of household and school education on learners' EA towards littering were based on such. I

suggest the following for future research within the discipline of environmental education:

7.8.1.1 Ethnography study

Scholars may conduct ethnography study to explore other elements of the study, which this current study could not reveal.

7.8.1.2 Teaching strategy

A study should be conducted to evaluate why teachers are not utilising AR approach as a teaching strategy to stimulate learners' awareness towards littering.

7.8.1.3 Grounds staff

A phenomenological study with grounds staff must be carried out to explore how grounds staff feels towards learners' littering behaviour or their lived experience in the midst of learners' littering. Moreover, the ground staff can also help to improve learners' behavioural pattern.

7.8.1.4 School principals

Schools principals' managerial styles do differ [Principals of South African schools have their diverse managerial and leadership styles which might have influence on EA on learners]. A study can be conducted to explore how their skills in both managerial and leadership styles can influence learners towards alleviating or eliminating littering.

7.8.1.5 Indigenous education

Intensive and deep study may be conducted to explore the effectiveness of indigenous education on children EA towards littering.

7.9   REFLECTIONS OF THE STUDY

Critical reflection is at the heart of AR and when this reflection is based on careful examination of evidence from multiple perspectives. It can provide an effective strategy for improving the organization's ways of working and the whole organisational climate (Mapotse, 2012: 191). When I reflect how I started this journey of incorporating environmental activities with the co-researchers at both their homes and school, littering was eminent and worse their order of the day. The co-researchers were lacking EA, which contributed towards littering on these earmarked research sites. The reflection aspects discussed below emerged from the study.

7.9.1 Personal

This study on personal level has broken boundaries of seeing myself as a teacher. Therefore, this study transformed me into an action researcher practitioner who sees a problem and act on it through working together with learners as co-researchers, which amount to a collaborative team. Moreover, when I left the school in April 2017, co-researchers, SEC members and some school members were sad since the study managed to change the school landscape and perhaps their behaviour towards the environment. That was the indication on how my study affected all stakeholders involved. One could boldly say that this AR study had effect on some school members and parents to view EE differently as they reflect and showed both a component of growth towards littering and EA.

In addition, this study helped me to boost my confidence as I presented the study to fellow students and lecturers at the third annual Master's and Doctoral conference held at Unisa Pretoria campus. After the presentation, audience posed questions and subsequently followed by discussions. The certificate of participation was awarded to me and the certificate is in Appendix 7.1.

7.9.2 Professional

Since the dawn of this study, I learnt so much. It should be noted that in an AR study, learning is mutual or reciprocal. For instance, taking co-researchers through AR journey and engaging SEC members to revive the committee was a learning curve for me. Consequently, I was elected as a coordinator for school-based Eco-schools Programme and this has improved my leadership and communication skills. Subsequently, the school has awarded me a certificate of appreciation for excellent initiative in clean environment. The certificate is in Appendix 7.2.

This study improved my academic writing and referencing skills immensely. Thus far, one research article, and a chapter working with my supervisor were published and conference paper was presented to the delegates on the 18-20 September 2017 (South Africa International Conference on Education held at Manhattan hotel, Pretoria). The certificate of participation is in Appendix 7.3. The article is entitled: "Nurturing learners' awareness of littering through environmental campaigns: an Action Research approach (https://doi.org/10.12973/ejmste/76658)". The conference paper was titled: "The effectiveness of environmental activities during knowledge based and action orientated integration" and lastly but not least the chapter bear this title: "Conscientize learners with littering in Environmental Education by using Action Research activities (ISBN: 978-1-5225-2642-1; DOI: 10.4018/978-1-5225-2642-1.ch015; pp 256-270)."

7.9.3 Academic

This study laid a foundation for future studies and scholars in EE and in other fields. It has shared the effects of household and school practices on learners' EA towards littering. I also indicated how these institutions could conduct their activities that could have effect on learners. As a result, academics and government could plan interventions to address littering at home and school

since learners spend time within these two institutions from birth to adulthood.

7.9.4 Environmental education approached through action research

In this study, AR proved to be an effective approach to deliver EE formally and informally while conscientising learners towards litter issues. I engaged co-researchers through EAR activities in a cyclic process of planning, acting, observing, and reflecting to raise their awareness of littering. EAR activities offer co-researchers a platform to voice out their concerns and provide solutions thereof. This study adds another strategy that teachers and relevant stakeholders can use to teach people and raise their awareness of environmental issues, including littering.

7.10 LIMITATIONS OF THE STUDY

The research findings of the study can only be generalised to the participants under the study since the study do not represent the whole population. The study was conducted at the school where I was working and I might be biased towards the study itself. I chose this school owing to its close proximity to me to minimise both the financial and time constraints.

The study could not observe learners' home constantly on account of time constraints. Moreover, I am a Sepedi speaker and the language barrier experienced in the study obstructed me not to engage participants intensively and robustly. The study included only selected Grade 8 learners. This excluded other grades and teachers. During completion of the questionnaire, the assistant and I read the questions to the co-researchers systematically to avoid incorrect completion and we could not avoid that since co-researchers were still young to understand the English used on their own as they are not native speakers of the language.

7.11 CONCLUSION

In this chapter, I discussed synopsis of AR study by highlighting chapters of the study, which led to the discussions and conclusion of the study. Progressive AR spiral cycles both at home and school were discussed, pointing how littering can be addressed within these institutions in collaboration with co-researchers. Progressive AR spiral cycles at home unfolded in two cycles while at school four cycles were used to address littering with co-researchers.

Summary of the study was explained in this chapter by underlining findings of the study. I provided recommendations on three levels that are home, school and DBE. These recommendations are put forward based on research findings for the betterment of both formal and informal education.

Suggestions for future studies are submitted in this chapter for other scholars to consider when they pursue EE-related research. I presented reflections of the study, which I put on four levels comprising personal, professional, academic, and teaching strategy. These levels reflect the capability of the study. The study could not reach other areas as on the limitations. Details explained on the limitations are made known for scholars to consider when exploring this study onward.

In summation, EAR activities in this study proved to be a useful strategy to conscientise learners towards littering within home and school setting. If conducted continuously through AR approach, this will end up improving learners' awareness of littering and in turn, litter will be reduced and eventually be eliminated.

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9. LIST OF APPENDICES

APPENDIX 1.1: LETTER REQUESTING PARENTS/GUARDIAN CONSENT

A LETTER REQUESTING PARENTAL CONSENT FOR LEARNER'S PARTICIPATION IN A RESEARCH PROJECT

Dear Parent/Guardian

Your child/ward is invited to participate in a study entitled: "**Effects of household practices and school education processes on learners' environmental awareness and attitude towards littering in Thokoza Township".** I am undertaking this study as part of my master's research at the University of South Africa supervised by Prof. Mapotse TA. The purpose of the study is to examine the influence of both the household and school institutions on learners' environmental awareness and attitudes towards littering and the possible benefits of the study are the improvement of school and home environment.

If you allow your child to participate, I shall request the child to take part in both a survey and an interview.

Any information that is obtained in connection with this study, which can identify your child, will remain confidential and will only be disclosed with your permission. The children responses will not be linked to their name or yours or that of the school in any written or verbal report based on this study. Such a report will be used for research purposes only.

Your child's participation in this study is voluntary. Your child may withdraw or decline to participate at any time. Withdrawal or refusal to participate will not affect the child in any way. Similarly, you can agree to allow your child/ward to be in the study now and/or change your mind later without any permission or penalty.

In addition to your permission, your child must agree to participate in the study and both of you will be asked to sign the assent form which accompanies this letter. If your child does not wish to participate in the study, the child will not be included as such there will be no penalty.

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow your child to participate in the study. You may keep a copy of this letter.

Name of child: _____

Sincerely

_____   _____   _____

Parent/guardian's name (print)   Parent/guardian's signature: Date:

_____   _____   _____

Researcher's name (print)   Researcher's signature   Date:

APPENDIX 1.2: LETTER REQUESTING LEARNER ASSENT

A LETTER REQUESTING ASSENT FROM LEARNERS IN A SECONDARY SCHOOL TO PARTICIPATE IN A RESEARCH PROJECT

Title of study: **Effects of household practices and school education processes on learners' environmental awareness and attitude towards littering in Thokoza Township.**

Dear _____

I am doing a study on littering as part of my masters' research studies at the University of South Africa supervised by Prof. Mapotse TA. Your principal/GDE has given me permission to do this study in your school. I would like to invite you to be a very special part of my study. I am doing this study so that I can find ways that your teachers and parents can use the information gathered from this study to improve school and home environment. This will help you and many other learners of your age in different schools.

This letter intends to explain to you what I would like you to do. There may be some words you do not know in this letter. You may ask me or any other adult to explain any of the words that you do not know or understand. You may take a copy of this letter home to think about my invitation and talk to your parents about this before you decide if you want to be in this study.

You are going to complete the questionnaire and answer interview questions. Your participation in the study will remain anonymous. You and the researcher will work together to come up with solutions to reduce littering around the school and also at home.

I will write a report on the study but I will not use your name in the report or say anything that will let other people know who you are. You do not have to be part of this study if you do not want to take part. If you choose to be in the study, you may stop taking part at any time. You may tell me if you do not wish to answer any of my questions. No one will blame or criticise you. When I am finished with my study, I shall return to your school to give a short talk

about some of the helpful and interesting things I found out in my study. I shall invite you to come and listen to my talk.

If you decide to be part of my study, you will be asked to sign the form on the next page. If you have any other questions about this study, you can talk to me or you can have your parent/guardian or any other adult, call me at: 076 752 0287.

Researcher: Mashiloane TK   Phone number: 076 752 0287

Do not sign written assent form if you have any questions. Ask your questions first and ensure that someone answers those questions.

✂ ✂

WRITTEN ASSENT

I have read this letter, which asks me to be part of a study at my school. I have understood the information about my role in this study and I know what I will be asked to do. I am willing to be in the study.

Learner's name (print) _____ Learner's signature _____ Date: _____

Witness's name (print) _____   Witness's signature _____ Date: _____

(The witness is over 18 years old and present when signed.)

Parent/guardian's name (print) ____ Parent/guardian's signature: ____ Date: __

Researcher's name (print) _____ Researcher's signature: _____ Date: _____

APPENDIX 1.3: REQUEST TO CONDUCT RESEARCH AT SCHOOL AND RESPONSE

4522/2 EXT 21

OAK STREET

PHUMULA

ROODEKOP

1401

10 June 2015

ATT: THE PRINCIPAL

CC: School Governing Body

XXXXX Secondary School

THOKOZA

1421

Dear Sir/Madam

REQUEST TO CONDUCT RESEARCH

I am a Masters student at the University of South Africa supervised by Prof Mapotse TA. I hereby request permission to conduct research at your school entitled "**Effects of household practices and school education processes on learners' environmental awareness and attitude towards littering in Thokoza Township**".

The study aims to explore the role of household and school education on learners' toward littering. I intend to work with selected senior phase learners (Grade 8). Learners will be expected to complete the questionnaire and answer interview questions which will be audio recorded using digital recorder. The completion of questionnaire and interviews will be done after school. Selected Grade 8 learners are going to work with me throughout the study.

This study is an Action Research design which I and the learners will work together after school to come up with solutions and strategies that will be implemented to reduce littering within the school and at home.

Learners' participation in this study is voluntary and they are free to withdraw anytime. The learners' parents will be made aware; in a way they will form part of the study so as to cover the household practice. Furthermore, collected data from the learners through interviews, questionnaire, policy documents and observation will be treated with strict confidentiality and will only be used for the purpose of the study.

Your school participation in this study will be based on voluntarism and confidentiality will be maintained at all times. If your school is willing to take part in the study, the data collected will be kept confidential.

If your school is in agreement with me to conduct the study at your school, please sign this letter as the declaration of consent. Signing this letter therefore means your school will participate in the study voluntarily and can withdraw from the study at any time.

Research's signature: _____ Date: **10 June 2015**

Principal's signature: _____ Date: 10 June 2015
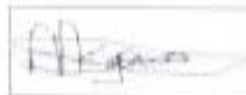
Thank in anticipation you for your support.

Yours truly

Mr Mashiloane TK   Signature:

Email:

Contact No : 076 752 0287

APPENDIX 1.4: UNIVERSITY OF SOUTH AFRICA ETHICAL CLEARANCE

COLLEGE OF EDUCATION
UNISA
2015 -09- 23
Office of the Executive Dean
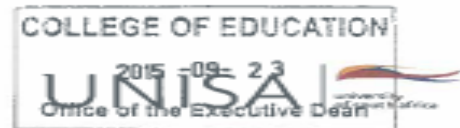
COLLEGE OF EDUCATION RESEARCH ETHICS REVIEW COMMITTEE

16 September 2015

Ref # 2015/09/16/48502928/17/MC
Student#: Mr TK Mashiloane
Student Number#: 48502928

Dear Mr Mashiloane

Decision: Ethics Approval

Researcher
Mr TK Mashiloane
Tel: +2776 752 0287
48502928@mylife.unisa.ac.za

Supervisor
Prof. TA Mapotse
College of Education
Department of Science Technology Education
Tel: +2712 429 4480
mapotta@unisa.ac.za

Co-Supervisor
Dr S Shava
College of Education
Department of Science and Technology Education
Tel: +2712 429 4782
shavas@unisa.ac.za

Proposal: Effects of households' practices and school education processes on learners' environmental awareness and attitudes towards littering in Thokoza Township

Qualification: M Ed in Environmental Education

Thank you for the application for research ethics clearance by the College of Education Research Ethics Review Committee for the above mentioned research. Final approval is granted for 2 years.

For full approval: The application was reviewed in compliance with the Unisa Policy on Research Ethics by the College of Education Research Ethics Review Committee on 16 September 2015.

The proposed research may now commence with the proviso that:

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the College of Education Ethics Review Committee. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.

3) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

Note:

The reference number 2015/09/16/48502928/17/MC should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the College of Education RERC.

Kind regards,

Dr M Claassens
CHAIRPERSON: CEDU RERC
mcdtc@netactive.co.za

Prof VI McKay
ACTING EXECUTIVE DEAN

Approval template 2014

APPENDIX 1.5: LETTER REQUESTING PERMISSION FROM GAUTENG DEPARTMENT OF EDUCATION TO CONDUCT RESEARCH

Enquiries: Mashiloane TK   ROOM 509

Cellphone: 076 752 0287   111 Commissioner Street

Email: mabu@live.com   Johannesburg

                                                 2001

                                                 03 June 2015

Dear Sir/Madam

REQUEST TO CONDUCT RESEARCH

I am a Master's student at the University of South Africa supervised by Prof Mapotse TA. I hereby request permission to conduct research at your school entitled **"Effects of household practices and school education processes on learners' environmental awareness and attitude towards littering in Thokoza Township"**.

The study aims to explore the role of household and school education on learners' toward littering. I intend to work with selected senior phase learners (Grade 8) of one secondary school in Thokoza Township. Learners' participation in this study is voluntary and they are free to withdraw anytime.

Thank in anticipation you for your support.

Yours truly

Mashiloane TK (Mr)

APPENDIX 1.6: DEPARTMENT OF EDUCATION APPROVAL LETTER

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

For administrative use:
Reference no: D2016 / 108
enquiries: Diane Buntting 011 843 6503

GDE RESEARCH APPROVAL LETTER

Date:	8 June 2015
Validity of Research Approval:	8 June 2015 to 2 October 2015
Name of Researcher:	Mashiloane T.K.
Address of Researcher:	4522/2 Ext 21; Oak Street; Phumula; Roodekop; 1401
Telephone / Fax Number/s:	076 752 0287
Email address:	mabu@live.com
Research Topic:	Effects of household practices and school education processes on learners' environmental awareness and attitude towards littering in Thokoza
Number and type of schools:	ONE Secondary School
District/s/HO	Ekurhuleni South

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved. A separate copy of this letter must be presented to the Principal, SGB and the relevant District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted. However participation is VOLUNTARY.

The following conditions apply to GDE research. The researcher has agreed to and may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

CONDITIONS FOR CONDUCTING RESEARCH IN GDE

1. The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter;

2015 / 06 / 07

1

Making education a societal priority

Office of the Director: Knowledge Management and Research
9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0506
Email: David.Makhado@gauteng.gov.za

2. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB);

3. A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned;

4. The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, SGBs, teachers and learners involved. Participation is voluntary and additional remuneration will not be paid;

5. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal and/or Director must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage;

6. Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year;

7. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.

8. It is the researcher's responsibility to obtain written parental consent and learner;

9. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources;

10. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations;

11. On completion of the study the researcher must supply the Director: Education Research and Knowledge Management with one Hard Cover, an electronic copy and a Research Summary of the completed Research Report;

12. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned; and

13. Should the researcher have been involved with research at a school and/or a district/head office level, the Director and school concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

Dr David Makhado

Director: Education Research and Knowledge Management

DATE: 2015/06/07

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GDE AMENDED RESEARCH APPROVAL LETTER

Date:	8 December 2015
Validity of Research Approval:	8 February 2016 to 30 September 2016
Previous GDE Research Approval letter reference number	D2016 / 108 dated 8 June 2015
Name of Researcher:	Mashiloane T.K.
Address of Researcher:	4522/2 Ext 21; Oak Street; Phumula; Roordekop; 1401
Telephone / Fax Number/s:	076 752 0287
Email address:	mabu@live.com
Research Topic:	Effects of household practices and school education processes on learners' environmental awareness and attitude towards littering in Thokoza .
Number and type of schools:	ONE Secondary School
District/s/HO	Ekurhuleni South

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved. A separate copy of this letter must be presented to the Principal, SGB and the relevant District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted. However participation is VOLUNTARY.

The following conditions apply to GDE research. The researcher has agreed to and may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

CONDITIONS FOR CONDUCTING RESEARCH IN GDE

1.   The District/Head Office Senior Manager/s concerned, the Principal/s and the chairperson/s of the School Governing Body (SGB.) must be presented with a copy of this letter.

2015/12/08

1

Office of the Director: Education Research and Knowledge Management ER&KM)
9th Floor, 111 Commissioner Street, Johannesburg, 2001

2. The Researcher will make every effort to obtain the goodwill and co-operation of the GDE District officials, principals, SGBs, teachers, parents and learners involved. Participation *is voluntary* and additional remuneration will not be paid;

3. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal and/or Director must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.

4. Research may only commence from the second week of February and must be concluded by the end of the THIRD quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.

5. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.

6. It is the researcher's responsibility to obtain written consent from the SGB/s; principal/s, educator/s, parents and learners, as applicable, before commencing with research.

7. The researcher is responsible for supplying and utilizing his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institution/s, staff and/or the office/s visited for supplying such resources.

8. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study *may not appear* in the research title, report or summary.

9. On completion of the study the researcher *must* supply the Director: Education Research and Knowledge Management, with electronic copies of the Research Report, Thesis, Dissertation as well as a Research Summary (on the GDE Summary template).

10. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned;

11. Should the researcher have been involved with research at a school and/or a district/head office level, the Director/s and school/s concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

[signature]
....

Dr David Makhado

Director: Education Research and Knowledge Management

DATE: 20/5/12/08 ....

2

Making education a societal priority

Office of the Director: Education Research and Knowledge Management ER&KM)
9ᵗʰ Floor, 111 Commissioner Street, Johannesburg, 2001

APPENDIX 4.1: OBSERVATION SCHEDULE AT SCHOOL

Makonya 2004 Appendix D adopted for this study.

1. Main activities/events at school during break/lunch periods
_____

2. Type of food bought or consumed at school
_____

3. Place where food is consumed: ☐Classroom ☐ School grounds ☐ Other

4. Disposal of waste materials: ☐ Bins ☐ On the ground ☐ Classrooms

5. Availability of disposal bins: ☐ None ☐ Few ☐ Many

6. Types of disposal bins: ☐ Dustbins ☐ Movable bins ☐ Rubbish pits

7. Learners environmental behaviour concerning litter: ☐ Use bins ☐ Place waste on ground ☐ Leave waste in classrooms

8. Teachers' environmental behaviour concerning litter: ☐ Use bins ☐ Place waste on the ground ☐ Leave waste in classrooms

9. Availability of school mission statement: Yes/No _____

10. Mention of environmental issues by the school mission statement: Yes/No

11. If yes, availability of school environmental policy: Yes/No _____

12. Is there a litter pick up duty roster: Yes/No _____

13. Daily school routine: ☐ Sweeping classroom ☐ Assembly ☐ Litter pick-up

14. General cleanliness of the school: ☐ Bad ☐ Fair ☐ Good ☐ Better

15. Other observations _____

16. Comments _____

APPENDIX 4.2: OBSERVATION SCHEDULE AT HOME

1.   Main activities at home _____

2.   General daily activities infuse environmental learning: ☐ Yes ☐ No ☐ to certain extend

3.   General cleanliness of the yard: ☐ Bad   ☐ Good   ☐ Other _____

4.   General cleanliness of the house: ☐ Bad   ☐ Good   ☐ Other _____

5.   Who keeps the yard clean: ☐ Mother ☐ Father ☐ Child ☐ Other _____

6.   Who keeps the house clean: ☐ Mother ☐ Father ☐ Child ☐ Other _____

7.   General activities that promotes environmental education: ☐ Vegetable garden ☐ Switch off unused appliances ☐ Other _____

8.   Visibility of litterbin around the yard: ☐ None One ☐ Two ☐ Other ☐ __

9.   Location of litterbin around the yard: ☐ inside house ☐ outside the house ☐ Other _____

10.   Garbage is thrown: ☐ litterbin ☐ on the ground ☐Other _____

11.   Types of litterbin: ☐ Dustbins ☐ Rubbish pits   ☐Other _____

12.   Other observations

_____

_____

_____

13.   Comments

_____

_____

_____

APPENDIX 4.3: QUESTIONNAIRE

LEARNERS' QUESTIONNAIRE

This questionnaire seeks to gather and explore the effects of household practices and school educational processes on learners. I would appreciate your time and efforts if you can answer this questionnaire honestly as possible. Please provide the following information and do not write down your **name or surname**.

Section A. Demographical information

1. Age (Please tick ☑ appropriate box	☐ ☐☐ ☐☐ Other: _____ 13 1 15 16	A1	
2. Gender (Please tick ☑ appropriate box)	1. Male ☐ 2. Female ☐	A2	

Section B. Addressing school environmental policy

1.   Does your school have an environmental policy?

B1	

☐   Yes

☐   No

☐   I don't know

2.   If Yes in Question 1, complete the sentence.

The policy is_____ practiced.

B2	

☐   Partially

☐   Fully

☐   Not

Section C. Litter monitoring at school

1. How do you rate the cleanliness of your school? | C1 | |

☐ Very dirty

☐ Dirty

☐ Partially clean

☐ Clean

2. Does your school have a litter pick-up duty roster? | C2 | |

☐ Yes

☐ No

3. If No in Question 2, then who cleans up? | C3 | |

☐ Teachers

☐ Parents

☐ Learners

☐ Other(specify) _____

4. If Yes in Question 2, how often do you pick-up | C4 | |
litter?

☐ Always

☐ Sometimes

☐ Never

☐ Other(specify) _____

5. Who monitors litter pick-up activities? | C5 | |

☐ Prefects

☐ Teachers

☐ Ground staff

☐ Other(specify) _____

Section D. General daily activities at home

1. How do you rate the cleanliness of your home

D1	

☐ Dirty

☐ Very dirty

☐ Partially clean

☐ Clean

2. Indicate daily cleaning activity/activities performed by you at home

D2	

☐ Cleaning the house

☐ Cleaning the yard

☐ Washing dishes

☐ Other(specify) _____

3. Who told you to perform these/this activity/activities in Question 2?

D3	

☐ Parents

☐ Teachers at school

☐ Other(specify) _____

Section E. Environmental Awareness

1.   Do you think littering is an environmental problem? | E1 | |

☐   Yes

☐   No

☐   I don't know

2.   When you see litter on the ground, what do you do? | E2 | |

☐   Throw in the dustbin

☐   Just leave it on the ground

☐   Push it aside for cleaners to pick it up

| E3 | |

3.   Do you litter?

☐   Yes

☐   No

i.   If No, why | E3i | |

☐   To keep the area clean

☐   Because I'm being told not to

☐   Other(specify) _____

ii.   If Yes, why | E3ii | |

☐   There are people employed to clean up

☐   I am creating a job for someone else

☐   Other(specify) _____

4.   Where do you place your food wrappers?   E4 [   ]

☐   Rubbish bin

☐   On the ground

☐   Other(specify) _____

5.   Whom do you think litters most often?   E5 [   ]

☐   Learners

☐   Parents

☐   Teachers

6.   Which area do you think is littered the most?   E6 [   ]

☐   At school

☐   At home

☐   Other(specify) _____

7.   Do you litter the school environment?   E7 [   ]

☐   Yes

☐   No

8.   Do you litter the home environment?   E8 [   ]

☐   Yes

☐   No

9.   Who is responsible for the cleaning of the school environment?

☐ Children

☐ Parents

E9	

☐ Municipality

☐ Everyone

☐ None

10. Who is responsible for the cleaning of the home environment?

☐ Children

E10	

☐ Parents

☐ Municipality

☐ Everyone

☐ None

11. Which institution, do you think should be kept clean at all times?

☐ Home

E11	

☐ School

☐ Both

☐ None

Section F. Education in environmental policy

1. Which institution do you think influences you the most to take action against littering?

F1	

☐ School

☐ Home

☐   Church

☐   Environmental organisations or other

2.   Who tells you not to litter the most? | F2 | |

☐   Parents

☐   Teachers

☐   Other(specify) _____

3.   Do you celebrate environmental day(s)? | F3 | |

☐   Yes

☐   No

4.   If Yes in Question 3, which environmental day(s)?

_____

5.   If Yes in Question 3, where do you celebrate environmental day(s)?

_____

6.   Which of the following provides you with the best environmental knowledge? | F6 | |

☐   Books

☐   Teachers

☐   Parents

☐   Other(specify) _____

Thank you for your time and efforts in completing this questionnaire.

APPENDIX 4.4: SEMI-STRUCTURED INTERVIEW

1.   What are the general activities that you perform at home daily?

2.   Do you think your daily activities towards the environment influences your child's actions not to litter?

3.   When you see plastic, papers and other unwanted items on the ground, what do you do?

4.   Does your child clean at home, if yes, how often? And If no, why?

5.   Do you think what your child learns at school is able to apply it at home?

6.   What are the methods that you apply to ensure that your child is environmentally literate?

7.   How many dustbins do you have in and outside the house?

8.   Do you know the effects of littering and health problems that might emanate from littering?

9.   When was the last time you saw yourself littering?

10.   How do you assess your activities towards the environment?

APPENDIX 5.1: INTIMIDATION TO THE CO-RESEARCHERS
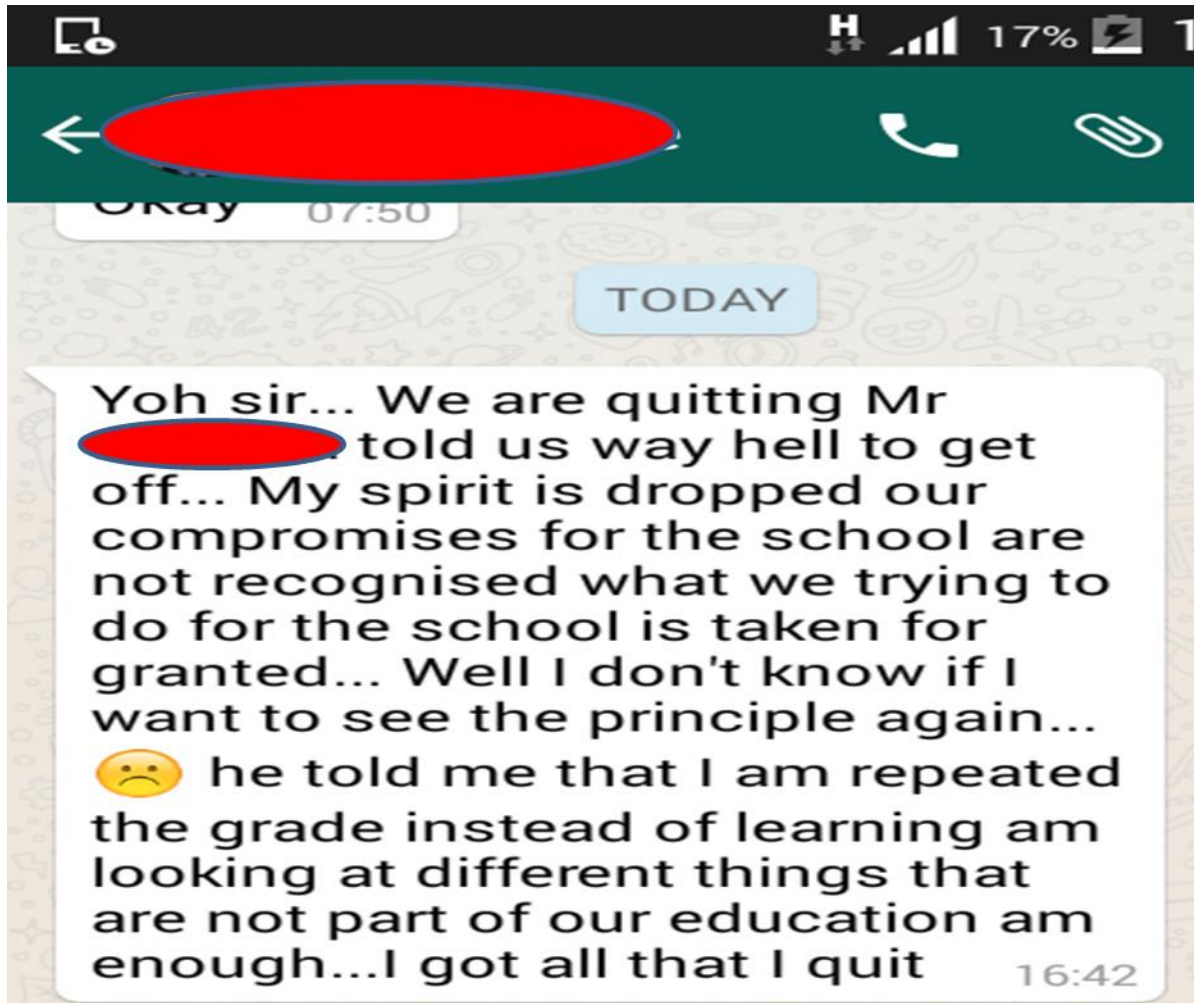
APPENDIX 5.2: SCHOOL ENVIRONMENTAL POLICY

XXXXXXX SECONDARY SCHOOL

SCHOOL ENVIRONMENTAL POLICY

"A commitment to save the earth"

XXXXXX SECONDARY SCHOOL
ENVIRONMENTAL POLICY

At XXXX Secondary School, we aim to provide healthy, conducive and caring school environment for all our learners, teachers, administrators and grounds staff. This policy aims to instil positive attitude towards the environment and teach learners to be environmentally literate, which will therefore care for their own environment. In order to achieve this, the policy has the following **aims and objectives** to:

- promote environmental education throughout all subjects.
- encourage extra-curricular environmental activities.
- address environmental issues posing threat to our health.

In order to achieve the above **aims and objective**, we aim to address and ensure:

1. **Energy Conservation**
   - Learners, teachers, administrators and grounds staff are reminded to switch off all electrical appliances when they are not using them.
   - Unplug cellphones and other devices chargers not in use.
   - Switch off all the lights at the end of each day.
   - Install solar energy and or any alternative energy source.
   - Keep the doors and windows closed to keep the room warm to avoid using more electricity during winter.

2. **Water Conservation**
   - All Taps must at all times be completely off when not in use.
   - Use cup to drink water from the tap and each class must have their own cups or bottles.
   - Check taps and hose pipes regularly for any leakage.

- Check toilet flush-buttons and should have a half-flush option.
- Cleaners are encouraged to use brooms or mop instead of using hose pipes for cleaning in order to save water.

3. Waste reduction

- Social media, emails and notice board should be used for internal communication for staff to avoid printing documents.
- Use social media or notice boards to remind learners about upcoming examinations or any announcement.
- Use electronic filing system to file learners work, learning material and other records.
- Print documents on both sides to save paper and if possible two pages per sheet.
- Place recycling box in all the classrooms and next to printers and photocopiers machines.
- Use recycled papers to print.
- Teachers should encourage learners not to waste food.
- Learners, teachers, administrators and grounds staff are encouraged to use reusable containers to pack food.

4. Litter reduction

- Class monitors should be work-shopped and developed once a week until such a time that they can cope with the situation. They need to provide challenges they are facing with regards to their environment.
- Install proper litterbin around the school grounds.
- Put into effect litter pick up roster duty.
    - Classes on duty could pick up litter 20 minutes of the cleaning time on Friday.
- Each learner should have a plastic bag attach to their desk or share a box under their table to put garbage.

- Promote use of litterbin inside and outside the classrooms.
- Empty litterbin regularly.
- Plant trees and lawn around the school.
- Fine litterers.
- Picking up of litter could be an option for those punished for various offences like late coming.
- No furniture e.g. chairs should be taken outside the classrooms.

5. **Recycling project**
   - All the corners of the school must have recycling boxes labelled type of recycling material.
   - All learners, teachers, administrators and grounds staff are encouraged to recycle, reduce and reuse materials.

6. **Food garden project**
   - There is need to set up and maintain a food garden project in the school.
   - Place waste material in the compost bin to make manure.

7. **Environmental education**
   - All school subjects should promote environmental education.
   - Teachers are encouraged to plan environmental lessons together per grade level.
   - School should provide funds to support field trips activities.

8. **Environmental day(s)**
   - All learners, teachers, administrators and grounds staff are encouraged to celebrate environmental days at school and home.
   - Celebrating environmental days will raise environmental awareness.
   - Use of recyclable materials to promote environmental day.

9. **Health and hygienic practice**

- Learners to be provided with tissue. The bathroom attendance personnel should roll out pieces of tissue from tissues rolls and give each and every learner who enters the bathroom.
- Fumigation should be carried out on areas of possible health risk areas like drains where waste from the kitchen collects.

10. **Control**

- There should be emphasis of no eating in the classroom. To this effect there should be strict control in classrooms.

APPENDIX 5.3: ENVIRONMENTAL CALENDAR

	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T
JAN					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
FEB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
MARCH		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
APRIL					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
MAY							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
JUNE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
JULY				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AUG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SEPT				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
OCT						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
NOV		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DEC				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

JAN: World Cancer Day, see page 4; World Day of Social Justice, see page 5; Leap Day for Frogs (SA) see page 6

FEB: World Wetlands Day, see page 3; World Water Day, see page 9; Earth Hour 8.30pm-9.30pm, see page 11

MARCH: World Wildlife Day, see page 7; Meatout Day, see page 8; World Meteorological Day, see page 10; Family Day (SA), see page 12

APRIL: International Day for Mine Awareness, see page 13; World Health Day, see page 14; International Day of Families, see page 12; International Earth Day, see page 16; World Days of Actions 20-26 April, see page 15

MAY: Workers' Day, see page 17; World Oceans Day, see page 21; International Museum Day, see page 18; International Day for Biological Diversity, see page 19

JUNE: World Environment Day, see page 20; World Population Day, see page 24; Youth Day (SA), see page 22; World Day to Combat Desertification and Drought, see page 23

JULY: National Women's Day (SA), see page 25; World Elephant Day see page 27 and International Youth Day, see page 22; World Mosquito Day, see page 28; Zero Emissions Day, see page 36; International Day Against Nuclear Testing, see page 29

AUG: World Lion Day, see page 26; International Literacy Day, see page 31; International Day for the Preservation of the Ozone Layer, see page 33; Recycling Day SA, see page 32; International Day of Peace, see page 35; World Tourism Day, see page 39

SEPT: National Arbor Week 1-7 September, see page 30; National Clean-Up Week 10-17, see page 32; International Coastal Clean-Up, see page 34; Heritage Day, see page 38; World Rhino Day, see page 37; World Rabies Day, see page 40; World Cities Day, see page 41

OCT: World Habitat Day, see page 41; World Animal Day, see page 42; Marine Week 8 - 15 October p44 & Weedbuster Week*, p45; African Penguin Awareness Day, see page 46; International Day for the Eradication of Poverty, see page 48; Disarmament Week 24-30 October, see page 49

NOV: World Teachers Day, see page 43; International Day of Science and Peace, see page 50; World Food Day, see page 47; Universal Children's Day, see page 51; Buy Nothing Day, see page 52; Birding Big Day (SA), see page 53

DEC: World AIDS Day, see page 54; World Soil Day, see page 55; International Mountain Day, see page 56; Day of Reconciliation (SA), see page 57

2016 is the International Year of Pulses

Dates in October for National Marine Week and National Weedbuster week should be confirmed with Environmental Affairs: Oceans and Coast (https://www.environment.gov.za/branches/oceans_coast) and Water and Sanitation, Working for Working Programme (www.dea.gov.za/wfw/).

APPENDIX 6.1: ECO-SCHOOLS PROGRAMME CERTIFICATE

Eco-Schools

Bronze

2016 AWARD

This is to certify that

XXXXX Secondary School

is working towards a healthy environment
and whole-school development.

WESSA Eco-Schools Programme

WESSA
90 YEARS of

APPENDIX 6.2: CLASS COMPETITION OBSERVATION SCHEDULE

1. Disposal of waste materials: ☐ Bins   ☐ Floor

2. Availability of litterbins: ☐ None   ☐ One   ☐ Two

3. Types of litterbins: ☐ Dustbin   ☐ Bucket   ☐ Cardboard box

4. Litterbins emptied by: ☐ Learners   ☐ Teacher ☐ Ground staff

5. How often litterbin is emptied: ☐ Everyday   ☐ Once a week

    ☐ Once a month

6. Visibility of school environmental policy: Yes/No _____

7. Is there a cleaning duty roster: Yes/No   _____

8. Who is responsible for cleaning: ☐ Learners ☐ Teachers ☐ Ground staff

9. General cleanliness of the class: ☐ Bad   ☐ Fair   ☐ Good

10. Other observations

    _____

    _____

    _____

    _____

    _____

    _____

11. Comments

    _____

    _____

    _____

    _____

    _____

APPENDIX 7.1: CERTIFICATE OF PARTICIPATION

APPENDIX 7.2: CERTIFICATE OF APPRECIATION

XXX Secondary School

XXX *Academic Excellence Awards 2017*
CERTIFICATE OF APPRECIATION
EXCELLENT INITIATIVE
CLEAN ENVIRONMENT
Awarded to
MR MASHILOANE TK

Signed by: _____
Principal

Signed by: D.M _____
SGB

APPENDIX 7.3: CERTIFICATE OF CONFERENCE PARTICIPATION

10 STUDY ANNEXURES

10.1 Research paper

Authors:	Tomé Awshar Mapotse: Department of Science & Technology, College of Education. University of South Africa (Unisa), South Africa
	Tsebo Kgoto Mashiloane: Department of Science & Technology, College of Education. University of South Africa (Unisa), South Africa
Publication Title:	Nurturing Learners' Awareness of Littering through Environmental Campaigns: An Action Research Approach
Publication type:	Research paper
Issue:	10/2017 vol. 13
Article No.:	EJMSTE-00942-2017-02
Abstract:	The availability and accessibility of disposable items has contributed immensely to our littering behaviour as humans. People discard plastic containers, paper wrappers and other items by throwing them onto the ground, thus aggravating the problem of littering. This study aims to assist the relevant stakeholders in integrating environmental awareness activities into the school curriculum, to drastically reduce littering in communities. Underpinned by developmental action theory and applied participatory paradigms, the study purports to assess the success of environmental action research campaigns aimed at combatting littering. Fourteen learners from seven classes served as co-researchers, having been randomly selected as participants in this study. Participants' observations and pictures were used to collect data, before resorting to coding

	and analysis. The results of the study show an improvement in learners' awareness of littering, allowing the authors to conclude that action research, if employed in environmental education, can raise learners' awareness pertaining to littering. A lack of environmental programmes in schools is also to blame for the fact that children often unwittingly litter or pollute their environment.
Language	English
Keywords	Environmental education, action research, developmental action theory, littering
Year	2017
No. of pages	13
Pages	6809-6821
ISSN (print)	1305-8215
ISSN (online)	1305-8223
DOI	DOI: 10.12973/ejmste/76658
File	www.ejmste.com/pdf-76658-14589?filename=Nurturing%20Learners'.pdf
File size	364 KB
Available	2017-11-10
Publisher	EURASIA Journal of Mathematics Science and Technology Education
Reference	Mapotse, T. A., & Mashiloane, T. K. (2017). Nurturing Learners' Awareness of Littering through Environmental Campaigns: An Action Research Approach. *Eurasia Journal of Mathematics, Science and Technology Education, 13*(10), 6909-6921.

10.2 Book chapter

Authors:	Tsebo Kgoto Mashiloane: Department of Science & Technology, College of Education. University of South Africa (Unisa), South Africa Tomé Awshar Mapotse: Department of Science & Technology, College of Education. University of South Africa (Unisa), South Africa
Publication Title:	Cross-disciplinary approaches to action research and action learning
Chapter tittle	Conscientize learners with littering in environmental education by using action research activities
Publication type:	Book chapter
Abstract:	The aim of this chapter is to provide delegates with a fresh perspective on the littering challenges facing schools and homes in developing countries today, as well as the established skills and awareness intervention strategies necessary to overcome these challenges hence sustaining the teaching of Environmental Education (EE). The extend of Africa's ignorance of EE subject amongst teachers has intensified and reinforced that action research (AR) be regarded as a tool for learner emancipation in the teaching of EE. EE is still seen as a foreign concept by many teachers and a notion that can be down played in school curriculum and home territory. In this chapter EE has find its way into school environment successfully and effectively through engaging learners as co-researchers with action research approach. The study was designed from educational living paradigm and is underpinned by collaborative learning theory. An intervention in the form of action research spiral cycle activities with the learners has managed to make them conscious about littering.
Language	English
Keywords	Environmental education, action research, developmental action theory,

	littering
Year	2017
No. of pages	15
Pages	256-270
ISBN	9781522526421
Series	Advances in knowledge acquisition, transfer, and management (AKATM) book series
ISSN (print)	2326-7607
ISSN (online)	2326-7615
DOI	10.4018/978-1-5225-2642-1.ch015
Available	July, 2017
Publisher	IGI Global
Reference	Mashiloane, T. K., & Mapotse, T. A. (2017). Conscientize learners with littering in environmental education by using action research activities. In T. A. Mapotse (Ed.), *Cross-disciplinary approaches to action research and action learning*, pp. 256-270. Hershey PA: IGI Global.