

*The Geographies of Environmental Education:
Narratives of High School Learners' Ecological
Awareness*

By

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TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS	ii
ABSTRACT	iii
CHAPTER 1	
INTRODUCTION	
1.1 Introduction	1
1.2 Focus, Aims and Rationale	3
1.3 Context of the study	3
1.4 Research Questions	5
1.5 Background of the Study	4
1.6 Structure of the Dissertation	4
1.7 Conclusion	5
CHAPTER 2	
LITERATURE REVIEW	
2.1 Introduction	7
2.2 Key Concepts	7
2.3 Africa's Views of the Environment	8
2.4 Environmental Issues and Learners' Knowledge	9
2.5 Learners' Factual Knowledge and Understanding of Environmental Issues	9

2.6 Learners' Environmental Misconceptions	12
2.7 Sources of Learners' Environmental Knowledge	14
2.8 Learners' Environmental Attitudes and Behaviours	14
2.9 Empirical Studies on Learners' Perceptions of Environment and Experiences of Learning	15
2.9.1 Ethnicity and Learners' Environmental Understandings	16
2.9.2 Environmental Conceptions and Gender	17
2.9.3 Age and learners' environmental conceptions	18
2.9.4 Learner Environmental Conceptions and Socio-economic Issues	18
2.9.5 Learners' Environmental Conceptions versus Environmentalism and Class	19
2.9.6 Learner Environmental Conceptions: Environmentalism, Race and Class (SA)	20
2.9.7 Learner Environmental Conceptions and Historical Influences	21
2.10 Changing Learner Environmental Conceptions through Environmental Education	21
2.11 Approaches to Environmental Education	24
2.12 Implementation of Environmental Education in South Africa	25
2.13 Challenges in Implementing Environmental Education in South Africa and Africa	26
2.13.1 Challenges in South Africa	26
2.13.2 Political Instability and Implementation of Environmental Education	27
2.14 Conclusion	27

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction	29
3.2 Conceptual Framework	29

3.2.1	New Childhood Studies	29
3.2.2	Children’s Geographies	29
3.2.3	The critical paradigm	31
3.3	Research Design	33
3.3.1	Sampling and Participants	34
3.3.2	Data Generation	34
3.3.2.1	Focus Group and Individual Interviews	34
3.3.2.2	Photo Voice	35
3.3.2.3	Transect Walk	36
3.3.3	Data Analysis	37
3.3.4	Validity and Reliability	37
3.3.5	Design Limitations	38
3.3.6	Ethical Considerations	38
3.4	Conclusion	49

CHAPTER 4

PRESENTATION AND DISCUSSION OF FINDINGS

4.1	Introduction	41
4.2	The Mophela Community: “A Neglected Island”	42
4.3	A Legacy of Apartheid	42

4.4 Post-Apartheid Empty Promises	43
4.5 Environmental Destruction	46
4.5 4.5.1 Sewage Ponds: The Stench and River Pollution	46
4.5.2 Sand Poaching and Land Degradation	51
4.5.3 Tree-felling	54
4.5.4 Garbage Disposal	56
4.5.5 Muddy Houses and Dusty Roads	59
4.6 Community Based Environmental Practices	61
4.7 Environmental Education	63
4.7.1 Learners' Environmental Knowledge	64
4.7.2 School Based Environmental Education	65
4.7.3 School Based Environmental Practices	67
4.7.4 A Case for Environmental Education	76
4.8 Resiliency and Agency	79
4.9 Conclusion	80

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

5.1 Introduction	82
5.2 The Focus of the Study and Research Questions	82
5.3 Theoretical Framework and Research Methodology	83
5.4 Findings of the Study	83
5.5 Researcher Reflections	85
5.6 Implications of This Study	86
5.7 Limitations of The Study	87

5.8 Concluding Thoughts	87
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REFERENCES	89
-------------------	-----------

Appendix 1 – Consent Letter to Principal	102
---	------------

Appendix 2 – Consent Letter to Learner	105
---	------------

Appendix 3 – Consent Letter to Parent/Caregiver	108
--	------------

Appendix 4 – Ethical Clearance Letter from UKZN	111
--	------------

Appendix 5 – Ethical Clearance Letter from the Department of Education	112
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Appendix 6 - Interview Schedule	113
--	------------

Appendix 7 - Interview Guide	117
-------------------------------------	------------

Appendix 8 - Transect Walk and Photo Voice Schedule	120
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Appendix 9 - Turnitin Report	122
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Appendix 10 - Letter from the Editor	123
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Appendix 11 -Interview Transcripts	124
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DECLARATION

I, Emmanuel Ndlovu, declare that this dissertation entitled: *The Geographies of Environmental Education: Narratives of High School Learners' Ecological Awareness* my own work and that all sources I have used or quoted have been indicated and acknowledged by means of complete references. It has not been submitted before for any degree or examination at any other university.

Emmanuel Ndlovu

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ABSTRACT

Rural areas in South Africa are one of the most fragile ecosystems, one in which the slightest imbalance in physical or social attributes or increased stress on the environment can result in ecological disruptions viz. the loss of biodiversity and land degradation. Thus the call for new trends and ideas where every individual regardless of age, level of education and economic status, would actively participate in protecting the environment from total collapse. Accordingly, the focus of this research was to delve into high school learners' experiences, understanding and awareness of environmental issues in the province of KwaZulu-Natal. The study sought to explore the learners' knowledge and understanding of socio-spatial justice dimensions as spatial justice is often taken for granted if injustices are committed against the poor and socially marginalized.

The concept of children's geographies, an area of study in human geography that focuses on the experiential spaces and places of children's lives guided this study. In order to gain a true understanding of learners' knowledge on environmental issues, a qualitative approach was utilized and the study was a narrative inquiry. The study was done at a rural secondary school 80kilometres north-west of Durban at Mophela Area, a predominantly poor community. The participants were six students aged between 15-18 years in grades 10, 11 and 12. Data was generated through interviews and two participatory research methods viz. photo voice and a transect walk.

The findings revealed that learners have been made aware of environmental issues through environmental education at school and that they were aware that these environmental problems would adversely affect their environment if left unchecked. The narratives of the study revealed that experiential learning was necessary to bring about a greater understanding of the environment and that people from impoverished communities found themselves exposed to unhealthy environments. In addition, the results revealed that local study group networks were available; augmenting the efforts of the school. The study also interestingly enough revealed that despite exposure to environmental dis-utilities and hazards, and what they perceive to be discrimination and alienation by the government participants successfully navigated these negatives and were able to forge ahead and aim for higher and better academic results.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Globally, we are facing unprecedented environmental degradation and in saying so, environmental conservation has become a necessity as access to healthy food, clean air and pure water are paramount to survival. For several decades scholars and environmentalists have punted the importance of implanting corrective and preventive measures to halt the escalating deterioration of the environment for example the United Nations (UN) Conference on Human Environment (Stockholm in 1972) strongly proposed that internationally there was an obligation of all nations to have an committed awareness of the environment as part of the ongoing curricular (Toili, 2007). Five years later in Tbilisi the goals were set out with plans to achieve those goals with the major aim of the conference being to encourage all countries of the world to conserve and preserve the environmental quality (Toili, 2007). The action plan was that education of the environment had to facilitate everyone with the means to constructively participate in rectifying the damage done to the environment (United Nations Educational, Scientific & Cultural Organisation-UNESCO-UNEP, 1990).

Individual countries were advised to design an *environmental education* curricular, the implementation of which would trigger the 'new environmental paradigm'. The new environmental paradigm starts with the premise that we are fundamentally one with nature and consequently our education in this regard must be of responsible ownership (Toili, 2007).

Environmental education at Tbilisi 1977 (United Nations) conference was described as the means of building the practical abilities and applications essential to promoting a sustainably healthy symbiosis between humanity and its cultures on one hand and nature on the other. The primary focus being to increase and promote pro-environmental values (UNESCO-UNEP, 1990) and the ultimate goal was to motivate children both as individuals and within social groups to be responsible for maintaining an ongoing balance between the needs of the societies and economy of the present without any harmful long-term

consequences (Yorek, Ugulu, Sahin, Dogan, 2010). In 1992, The UN Conference on Environment and Development was held in Rio de Janeiro and in particular Agenda 21 of the conference reiterated with regards to the UNESCO-UNEP, (1990) that environmental education would help school going children to actively participate in activities that would help to safeguard the quality of the natural environment.

In an effort to grow as an environmentally conscious society, South Africa in particular has undertaken steps to recognise and address the challenges that land degradation and climate change poses. This is evidenced by South Africa's undertaking in 'The World Fit For Children Declaration' a Special Session on Children held by the UN General Assembly in 1992 and subsequently, the South African Constitution Bill of Rights (South African Children's Act, 2005: Republic of South Africa, 1996) is not silent about environmental issues as Section 18 (A) assures everybody an ecologically safe environment and that said environment be protected by legislature and whatever other necessary measures to prevent all threats of pollution and damage to the ecology and to increase awareness of conservation for all, (The Republic of South Africa, 2000).

The current distribution of environmental exposures such as the location of recreational facilities and environmental burdens i.e. sewage treatment ponds and dumping sites (landfill zones) in South Africa, persist from both its past as a colony and the apartheid era especially, during which time racial segregation resulted in inequalities that continue to exist (Coovadia, Jewkes, Barron, Sanders & McIntyre, 2009). This means that to date, a percentage of the formerly marginalised groups are still exposed to environmental burdens and a percentage of the formerly privileged groups continue enjoying the environmental quality and facilities. The commitment of the government to promote a definitive strategy to counter pollution and prosecute those responsible has come with marked and significant improvements but millions of poor people are still exposed to environmental hazards such as air, water and land pollution (Marmot, 2005).

With environmental literacy, awareness, the right attitude and sensibility, people can contribute positively in reducing damage done to the environment. Consequently, a holistic understanding of the environment is regarded as essential in raising learners understanding of and addressing and responding to all environmental concerns (Fernandez-Manzanal, 2007; Tuncer, Tekkaya, Sungur, Ertepinar & Kaplowitz, 2009). To achieve this it is essential to establish positive learners' behaviours with regards to the environment (Fernandez-

Manzanal, 2007). Fernandez-Manzanal (2007) emphasize that a positive base in turn provides essential awareness of the parameters that will ultimately impact on the environment and the mind-set to change theory into pro-active practices.

1.2 Focus, Aims and Rationale

The focus was on the ecological knowledge of learners, how they experienced their environment and their behaviour towards the environment. Therefore the aim of this investigation was to gain an understanding of the learners' conceptions about the environment, how these conceptions were developed and the extent to which environmental education shaped their environmental awareness, attitudes, behaviour and agency both in and out of the school context.

With the intention to garner a deeper understanding of learners' knowledge of the environment and environmental issues, the study aimed at establishing the extent to which social geographies impacted on environmental education by focusing on:

- 1) Learners' understanding of ecology and environmental issues and,
- 2) Their vision for the future of the environment as well as their engagement with and contribution to environmental protection.

1.3 Context of the Study

The study was conducted at a secondary school about 80kilometres north-west of Durban in the watershed of Umlazi River. The area is just outside Mpumalanga Township which boasts up-to-date utilities such as water-carriage system toilets, clean water, proper garbage disposal system and stadiums. The beautiful mountainous and hilly area as observed from a distance is grossly polluted by the smoke and fumes from the chicken, textiles and manganese factories and industries surrounding the area. The area is serviced by a single tarred road, MR 34. Branching from the main road is a network of dusty roads that move to traditional homes which are not serviced but randomly organised. The ever-flowing Umlazi River, once a haven of aquatic life, is now heavily polluted by the industrial discharges. The sewage treatment works and ponds produce a continuous pungent smell which the surrounding communities are perennially subjected to. The raw sewage often leaks into the river system creating high levels of eutrophication. The community's

disproportionate exposure to pollution and environmental hazards give rise to environmentalism, race and class. The school was primarily chosen because of its exposure to these environmental neglects and also as an educator at the school, I was strategically positioned to gather maximum data with limited travel expenses. Therefore my sampling of the school was purposive.

The community consist of three primary schools and one secondary school. The population as identified during the interviewees' biographical collection consists mainly of grandparents, single mothers and orphans. The Mophela community is predominantly poor. The majority of the people work in nearby farms and in multimillion-Rand chicken industries. Bucket and pit latrine toilet systems are used, people collect water from the municipal stand taps which regularly run dry and the alternative source of water is the ever-flowing Umlazi River. The Sewage treatment ponds for the EThekweni Municipality Northern region are situated in this area, (waste/sewage refers to all solid residuals consequential to human activities and can be categorized as organic or inorganic according to its chemical composition, Environmental News, 2007). Ironically these villagers do not have the water-carriage system toilets (flush-toilets), but instead use bushes and pit latrines to relieve themselves and are exposed to indefinite pungent odour coming from these sewage ponds.

The National Environmental Management Act (NEMA) of 1998 promised equitable environmental treatment and it sets out that undesirable environmental impacts shall not be distributed in such a manner as to unjustly discriminate against any persons, in particular susceptible and underprivileged persons (Republic of South Africa, 1998). The paradox here is that millions of the former marginalised groups who are predominantly black in South Africa still lack safe water and sanitation and these environmental hazards impose costs such as lost work days due to illness and shorter lifespans apart from other immeasurable losses (Durning, 1990). Spatial justice which is a link between social justice and space, questions the ontological relationship between man and the world around him seeking a fair policy in addressing environmental problems and issues without considering the socio-economic status or race of an individual. Mindful of that, spatial justice is often taken for granted if injustices are committed against the poor and socially marginalised populations (Soja, 2010) as reflected in the abovementioned area. The rationale behind this study was

also influenced by my personal desire to fulfil the constitutional mandate of giving children an opportunity to speak about their environment as they experience it.

There are studies (Lumadi & Sethusha, 2013) that have focused on environmental education and schooling. This study however, aimed at privileging children's voices by investigating their perspectives on environmental issues, education and conservation, (conservation refers to sustainable use of environmental resources). Therefore this study fixed on the relationship connecting the learner and the natural environment and further set out to justify the aesthetic appreciation of the natural world by learners and how they view the environment in the world dominated by socio-economical dynamics. Learners through story and narratives address the interconnection. Learners were used in this study as a direct response to the UN 1992 conference Agenda 21 which strongly advised the nations of the world to ensure that children were encouraged to participate actively in environmental conservation as they were susceptible to the effects of environmental hazards both at present and in the future, (UN, 1992).

1.4 Research Questions

- What are the high school learners' ecological understandings of environmental issues?
- What are the contextual dynamics that affect high school learners' ecological understandings of environmental issues?
- How do learners navigate environmental issues in the context of a high school?

1.5 Background of the Study

My focus was to establish and ascertain the extent of the learners' ecological understandings of environmental issues. The school was selected because of its closeness to my residential area and consequentially the travelling costs were minimised. The learners were selected because of their exposure to environmental studies in biological sciences and their keenness to participate in the study.

A narrative inquiry through individual and focus group interviews along with photo voice and transect walks were used to collect rich and descriptive data. Participants were given cameras and asked to visually document the environmental issues during a transect walk. Interviews were audio recorded and subsequently transcribed, both individuals and the focus group. The transcriptions were then encoded, categorised and thematised to gain the understanding of participants' awareness in schooling as well as community settings.

The study was then framed within a geographical outline that studies the places and spaces of children's lives, namely children's geographies, (Muthukrishna, 2013). Children's geographies are embedded within the concept that a child's formative years, as determined by childhood studies, are determined by the children being intrinsically connected to the perception and building of their own lives. These conceptual theories were used to investigate the learners' ecological understandings of environmental issues.

1.6 Structure

The study consists of five chapters:

Chapter 1

This chapter tables the background of the entire study. It gives a full descriptive title of the study, the focus, motivation and rationale of the study as well as the research questions. The reader is introduced to the background of the study.

Chapter 2

This provides a review of relevant studies emanating from major studies on education pertaining to the environment and the related concepts such as environmental issues, socio-

spatial issues and unfair distribution of environmental burdens, the curriculum and the actual teaching and learning of environmental education as it occurs in the classroom. Empirical studies that have examined places and spaces of children with regard to environmental issues are also discussed and outlined.

Chapter 3

Within this chapter, the research approach and methods adopted are discussed. Insight into the context, research design, data collection as well as presenting the extent to which these are valid, reliable and ethical.

Chapter 4

In this chapter the synthesized data based on the findings is presented. The chapter provides narratives of high school learners' understandings of environmental issues, the contextual dynamics which influence their understandings of these issues and how they navigate these issues. It presents the major themes which emerged during the data analysis process. This chapter is presented using the conceptualisation of children's geographies that is place and space.

Chapter 5

In this chapter, the improved assessment and response for community leaders, government and especially for schools for creating an eco-literate citizenry are discussed. The reflective discussion of the journey through the study is also discussed at the end of this chapter.

1.6 Conclusion

This chapter provided an overview of the structure of this dissertation. It introduced the aims and rationale for this study, presented the research questions that framed the study, offered a background of the study and ended with a brief structure of the study. Chapter 2 details a review of the literature related to the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is a review of the relevant literature and defines key concepts that inform this study. It also presents a discussion of international and national perspectives and studies on learners' ecological awareness and environmental education.

2.2 Key Concepts

Providing definitions to certain concepts of a study is often a challenge for researchers as oftentimes conceptualisations are indistinct and open to interpretations. As such, operational definitions of the key concepts that are relevant to this research study are provided.

Trivedi & Raj (1992) defined *environment* as the collative sum of all conditions and influences of the development of life viz. human beings and other organisms which includes air, water and land. A dynamic interrelationship exists between property, human beings and other living creatures such as plants and microorganisms thus the term environment embraces the conditions or influences under which any organism exists, lives or develops (Trivedi & Raj, 1992).

UNESCO (1978) defines *Environmental education* as defined by UNESCO (1978) as the process of learning that increases an individual's awareness and knowledge of the environment; is connected to challenges and allows for the development of essential skills and practical abilities to tackle the challenges (UNESCO, 1978). *Environmental awareness* allows one the ability to be sensitised with regards to concerns about the environment, (UNESCO, 1978)

Environmental literacy as defined by UNESCO (1978) concerns the ability to understand and make subsequent conclusions with regards to a specific environment and the knowledge gained from environmental education. It is outcomes based, and the ultimate objective of environmental literacy contributes to promoting the development of an individual who has a personal connection with the environment (UNESCO, 1978).

Environmental action/activism is a philosophical discipline that considers the moral obligation humans have concerning the environment (Gillaspy, 2014) while *environmental knowledge* is the capacity of people to understand and address environmental issues, (Darder, Marta, Torres, 2009).

Environmental attitude/values are the feelings, concerns and motivation towards participation in environmental improvement and protection. These attitudes and values are the initial steps leading to the ability to carry out responsible citizenship environmental behaviour (Sengupta, Banerjee & Maji, 2010).

Environmental injustice is any practice that does violence to the environment such as pollution, land degradation and many others while *environmental justice* is any action or behaviour that is deliberately undertaken in order to avoid negating the healthy state of nature, (Darder et al., 2009). Freire puts forth an appealing sentiment when he says “I don’t believe in love between men and women, between human beings, if we are not able to love the world/environment”, (cited in Darder et al., 2009: 522), which adequately sums the concepts of environmental justice and injustice.

2.3 Africa’s Views of the Environment

“We do not inherit the earth from our ancestors, but instead we borrow it from our children.” African proverb cited in (Ajiboye & Ajitoni, 2008: 23).

This is an African proverb warning current generations against recklessly abusing the environment for it is not for us only but for the future generations. The proverb seems to suggest that people in Africa generally recognise the need to preserve and conserve the environment. It portrays a glamorous picture about the levels of understanding around issues of the environment; portraying a notion that people are aware of the hazards that might befall the planet if environmental issues are not addressed. However, there is greater recognition of problems caused by land degradation, air and water pollution, leading to an understanding of the possible hazards that might befall our planet if the use of resources is not properly managed in South Africa, (Lumadi & Sethusha, 2013).

The next generation is presumably supposed to benefit from the present day natural resources, hence the burden of ensuring future generations get their share of today’s

natural resources lies with the present generation. This means that the present young children should be made to understand that it is their responsibility to preserve the present natural resources for the future generation. In spite of this perceived notion about environmental awareness, the concept of climate change and environmental conservation are still relatively new to the general South African public, (Lumadi & Sethusha, 2013).

2.4 Environmental Issues and Learners' Knowledge

Palmer (1998) in a research carried out in Britain and Australia argues that learners should acquire knowledge and understanding of environmental concepts in order that informed judgement is achieved. In order to achieve environmentally focused skills, the three major components i.e. attitude, knowledge and awareness (AKA) are essential for a learners' understanding of environmental issues within the school and outside the school premises (Palmer, 1998). Attentiveness and understanding of ecological processes play vital roles in environmental education and contribute to change in environmental behaviour of the learners (Hernandez & Monroe, 2000). Environmental education is therefore seen as crucial in transforming the attitude of people, rich and poor, for sustainable social and environmental relationships. It should not be seen as an additional subject, nor an option, but an action to counteract the social and environmental doom and gloom, (Lumadi & Sethusha, 2013). It is more than recycling, composting and keeping earthworms, but an understanding of how ecosystems and natural systems work (Birch & Veroff, 1993).

The concept of a global marketplace has resulted in an international competitiveness, for example, where land once used to produce food for the adjacent community now grows exotic fruits and has forced those of lower social and economic statuses into displaced and inappropriate farmlands that are subject to erosion (Godrej, 1995). As a result, our societies and particularly the future economic wellbeing of our children are under threat from businesses unless learners and adults develop an understanding of the impending environmental gloom and act in a manner that aims to counteract the possible environmental disaster, (Lumadi & Sethusha, 2013).

2.5 Learners' Factual Knowledge and Understanding of Environmental Issues

Most learners' perception of ecological issues in the United Kingdom is more restricted than their accurate awareness i.e. generic knowledge gained by an individual, about the environment (Rickinson, 2001). Rickinson's (2001) study reveals that factual environmental

knowledge is frequently not evident in positive comprehension of the environment, for instance, there was an inconsistency between learners' understanding that using fossil fuel results in air pollution and insight of the inevitable results of continued usage of that as a source of energy. The study records that learners lack an understanding that extend beyond the everyday perception concerning basic awareness to offering solutions for that problem. Therefore this study reveals that there is a need to connect factual knowledge with the understanding of issues. Environmental education should not be limited to factual knowledge only, but extended to deep understanding of environmental issues.

Ugulu, Sahin & Baslar, (2013) argue that besides the limited connection between factual knowledge and deep understanding of environmental issues, people in Turkey are driven by socio-economic factors and non-restrictive by-laws continue in engaging in environmentally unfriendly behaviours such as land degradation, pollution and deforestation at personal, business and social platforms. These unbecoming behaviours create and exacerbate a multitude of environmental threats that pose serious consequences to the wellbeing of all life (Gore, 1993). Ugulu, et al. (2013), further argue these negative approaches towards the ecosystem are less considerate towards addressing negative impacts on conservation therefore the combination of this factor and lack of environmental knowledge pose a serious threat to the natural environment.

Contrastingly though, it was found that in countries such as India, the strong constructive link between ecological knowledge with a positive approach to ecology attitude towards the environment has resulted in environmental studies becoming an obligatory subject in schools (Ghosh, 2014). Thus, it can be said that tutoring our future generations with respects to the natural environment is crucial to establishing the foundation for an ongoing constructive environment with a perpetuation of ownership and responsible approach to the ecology be that at individual or societal or governmental levels (UNESCO-UNEP, 1990).

Several studies (Ajiboye & Ajitoni, 2008, Lumadi & Sethusha, 2013, Ugulu, et al, 2013, Rickinson, 2001) investigating learners' attitudes towards the environment suggest that learners' factual knowledge towards the environment was positive but environmental destruction has continued unabated at local, regional and global levels (Bulent, Cavas, Ceren, Jale & Teoman, 2009), thereby consolidating the statement that factual knowledge

without sound understanding of environmental issues does not offer solutions to environmental problems. Schultz (2000), in his study concurs that learners' understandings of environmental issues in the United States of America were malleable across many situations and acknowledges that there exists a gap between learners' factual familiarity and the personal allegiance to the environment. If such a gap between factual knowledge of learners and their understandings of the environmental issues is wide, then the environmental concerns are very low and if the gap is minimal the environmental concerns are very high (Shultz, 2000).

Environmental education is therefore seen as an activity that bridges learners' factual awareness and a more comprehensive understanding of the environment. A proper inter-connection between factual knowledge and understanding of environmental issues evokes empathy and relevant environmental behaviour (Shultz, 2000). In the South African context, this objective is embedded in the educational critical outcomes and also enshrined in the national constitution (White Paper 6, 2001).

A study by Mutisya & Barker (2011), in rural Kenya found that school children had high factual familiarity of environmental concerns and problems such as land degradation and pollution taking place in their communities, but a gap existed between the awareness of problems and motivation for participation in conservation. There is no direct progression from factual knowledge to attitude behaviour. Hines, Murad & Beal, (1987), thus proposed that environmental education should not be limited to semantics and affirmations of environmental issues and problems, but to the acquisition of environmental values and attitudes so that citizens can appreciate conservation of the environment as a collective responsibility (Dusan & Stanka, 2009).

Mustafa (2010), outlines that humans continue to engage in environmentally damaging behaviours not because of lack of knowledge but due to a limited understanding of environmental issues. These behaviours add to many environmental difficulties which endanger all living species. Therefore, educational endeavours are regarded as a means of increasing human environmental understandings, leading to the addressing of environmental problems and change in behaviour (UNESCO-UNEP, 1991).

Mustafa's (2010), study in Turkey recognises challenges for the cognitive, metacognitive, affective and behavioural attitudes of humans so as to make it sensitive to environmental issues. An additional goal, the study reveals, is to make people develop

positive attitudes, emotions and thoughts about the environment. This study therefore reveals that environmental education gives the learners not only factual knowledge but an understanding that brings about awareness and the development of positive environmental attitudes (Ajzen & Fishbein, 1980). Attitudes are directly related to behavioural change and the latter is a function of change in behavioural intentions and attitudes (Bitta, 1993). My study therefore sought to understand the learners' attitudes towards existing environmental issues and the above study gave direction to my research.

2.6 Learners' Environmental Misconceptions

Several studies in Africa, the United Kingdom and United States suggest that learners generally report inadequate realistic awareness regarding environmental concerns (Bassey, 2000, Ugulu, et al., 2013, Ajiboye & Ajitoni, 2008). Most learners perceive the environment as natural living organisms with limited human interference. It is viewed as a relatively static entity which can be used by young people for leisure and solitude. Within this view, the introduction of environmental education is seen by learners, as means of trying to protect a potentially dangerous entity which is frightening and under threat (Bassey, 2000).

Studies on learners' concepts of individual occurrences such as the greenhouse effect indicate misconceptions of the scientific aspect of these issues. Learners sometimes confuse the greenhouse effect with ozone depletion, sometimes displaying inadequate understanding between, for example, melting and recycling (Bassey, 2000). Rickinson (2001), voices against non-practicability of environmental education and its lack of relevance as the major source of misconceptions in learners. He criticises the use of indistinct notions such as pollution, saying this hinders the understanding of pollutants and environmental problems and identifies the use of abstract terms such as habitat in texts. Rickinson (2001), further states that learners have inherent misunderstandings with regards to the science governing these issues and identifies misconceptions due to failure to distinguish facts, uncertainty about procedures, indecision related to structure of knowledge, funnelled ideas and the conflict related to various external influences such as education, media, friends and parents (Rickinson, 2001).

In the late 1980s the first applicable studies were published, although not followed-up in detail until another two decades, (Hansen, 2010). Gavrilakis, Georgia & Athanasiadis, (2010) carried out a study in Greece among secondary school children. The objective of the

study was to establish how grade 8 and 11 students perceived environmental issues and environmental problems. A closed-form questionnaire regarding the causes, impacts and solutions for global environmental issues and problems was completed by 626 students. The study examined the possible influence of three factors – i.e. level of educational, gender and participation in previous environmental education extracurricular programmes. The results showed that eleventh graders were markedly better informed about environmental issues than eighth graders, this therefore shows that factual knowledge is essential as basis for deep understanding of these issues, (Gavrilakis, et al., 2010). However, irrespective of educational level some of the misunderstandings reported in the literature (such as the cause-effect relationship between the greenhouse effect and ozone layer depletion) persist. With regards to the impacts the students have relatively clear understanding but are confused about solutions and causes (Gavrilakis, et al., 2010).

A possible reason is that the logical sequence of physical consequences and students' difficulty in recognizing causes that presume specific scientific knowledge are emphasized. Also the role of television which emerged as the dominant alternate information source was taken into consideration and debated. Finally a critical factor is the participation in environmental education programmes since it has clearly impacted positively on students' perceptions. This article was directly related to my study as I sought to understand the learners' knowledge about environmental issues. The issues of the greenhouse gases and global warming are a cause for concern as outlined by Agenda 21 (U.N, 1992). The conference U.N. 1992 Agenda 21 outlined the importance of designing national schools' curricular that would incorporate environmental education so as to motivate learners to act individually and collectively in an environmentally friendly in order to mitigate the scourge hazards such as land degradation, emission of greenhouse gases and global warming, (U.N, 1992).

2.7 Sources of Learners' Environmental Knowledge

The major sources of learners' environmental information are the television sets, print media, Twitter, Facebook and the classroom. Additional include peers, family and interaction with the environment. Villacorta, Koestner & Lokes, (2003), state that learners

were more prone to positive behaviour if they had been exposed to similar interest by parents or adult role models. Friends on the other hand are influential in supporting their freedom to make decisions about environmental actions. Ignell, Lindholm & Davies, (2013), explored the learners' understandings of environmental issues through pricing. Environmentally friendly products such as wood paper and organic fertilizers are cheaper than non-biodegradable materials (plastics and e-wastes) and if learners, including adults understand the environmental dimension in the pricing of goods then that would influence the understanding of environmental issues. However, this is not always the case and Leiser & Halachmi (2006), blame curriculum designers for discouraging the integration between the sciences and economic perceptions as this restricts the learners' understanding of environmental issues in the context of the world that is market orientated. There is however, some evidence (Bassey, 2000), that environmental knowledge and information sources can be influenced by some factors such as status, age, as well as ethnicity. These are discussed in detailed in the later part of this chapter.

2.8 Learners' Environmental Attitudes and Behaviours

In her study Sethusha (2006), indicates that learners depict feelings, emotions and sensitivity towards the environment and identified that most learners were overwhelmingly able to identify humans as the major cause for environmental hazards because of irresponsible activities such as littering, cutting down trees and indiscriminate burning of litter. The study showed learners have an individualistic framework concerning thinking about the environmental-related matters and problems and illustrated that learners in general, acknowledge that human activities could contribute to environmental problems but this understanding features prominently in personal hopes and fears as opposed to global action (Sethusha, 2006).

Orr (1992) reflects positive environmental attitudes are the consequence of environmental knowledge that the learners have, knowledge which should not be merely regarded as the sum of accumulated facts and concepts but "knowledge necessary to comprehend interrelatedness and an attitude of care and stewardship" (Orr, 1992:92). Rickinson (2001), notes that learners generally hold positive environmental attitudes and seem to agree with pro-environmental sentiments that seek to cure the environment as it slowly degenerates due to irresponsible environmental behaviour. However, he notes that

learners' positive perceptions were stronger, for instance, for issues like waste disposal and ozone depletion and less prominent when it touched on their personal lives, for example, driving a car that emits greenhouse gases (Rickinson, 2001).

2.9 Empirical Studies on Learners' Perceptions of Environment and Experiences of Learning

Emerging studies on learners' perception of the environment emphasise the voice of the learner with an intention of determining how they perceive the environment and rationalise it (Rickinson, 2001), thus necessitating explorative processes that regard learners as active and not passive scholars. Within this paradigm, the status quo and traditional models of learning about the environment are challenged and emphasis is put on learners' environmental perceptions rather than environmental knowledge and environmental experiences are encouraged and nurtured at the expense of traditional outcomes, (Rickinson, 2001).

For example studies conducted in United States and United Kingdom (Wals, 1994a; 1994b); Australia, (Baron, 1995; Payne, 1995), argue the importance of understanding the learners' experiences and perceptions about the environment in order to adapt environmental education that responds to the contextual and social dynamics relevant to the learner. The emerging framework is predominantly qualitative in nature and most of the studies were based on semi-structured interviews. This is important as it ensures that the needs of the learner are not disregarded and that an appropriate ecological edification is designed to be a practical and workable educational tool (Lai, 1999).

Barker & Weller, (2003) stress that learners are not mere inactive observers who rely on constant adult guidance, but are capable social participants and able to identify with, and actively play a role in redefining their environment. The study focused on the importance of engaging learners with the issues of environmental degradation and pollution as they are directly involved. Consequently, the paper was directly linked to my study and gave guidance in that it explained the importance of engaging learners as active humans in dealing with environmental issues.

Lumadi & Sethusha, (2013) look at the grade six learners' perceptions of environmental awareness in South Africa and they investigated the learners' understanding of preservation, reprocessing, contamination and land degradation. The study was informed

by constructivism and its applications in environmental education and sought to ascertain what the learners already know and how this knowledge was essential to promote good behaviour in relation to the environment. The study revealed that learners' knowledge and awareness of environmental concepts are relatively low in South Africa and acknowledges that learners' conceptions and assumptions about the environment are unfortunately often ignored. The article cites two possible reasons for this neglect: (1) Curriculum specialists fall short in knowing about learners' notions and perceptions about the environmental issues, or (2) learners' conceptions and assumptions about the environmental issues are not taken seriously. This study revealed the weaknesses of traditional environmental education in a world which is shifting towards giving learners an opportunity to voice issues that affect them. Learners' understandings of ecological issues are influenced by certain contextual features, for example ethnicity, gender, social and economic status and geographical positioning, (Lumadi & Sethusha, 2013).

2.9.1 Ethnicity and Learners' Environmental Understandings

Larson (2008) carried out an investigation on environmental attitudes and awareness of learners from different ethnic groups in the United States of America. The survey revealed three primary components of attitudes and awareness which are: environmental-affinity, environmental-awareness and environmental content knowledge. The study revealed that ethnicity and originality impact on and define the growth of some environmental attitudes. Earlier research revealed lower levels of environmental concern among African-American ethnic groups in the USA (Hershey & Hill, 1978). Environmental affinity levels for both white and black children in that study were practically identical and as such consistent with the contemporary researches on the subject of ethnicity (Mohair & Bryant, 1998). Significant differences emerged in the eco-awareness between blacks and whites. Learners from black and poor backgrounds scored lower on the content knowledge portion. The study further revealed that students from black communities cared more about nature than their white counterparts but were less aware of issues related to environmental importance and sustainability than learners from white and rich communities. This discrepancy could be that when basic survival needs are not fulfilled on a regular basis, many impoverished children are not motivated to care about broader issues like resources and conservation (Maslow, 1943; Mohair & Bryant 1998). Fishman (2005) explains that

children from poor communities are less inclined to nurture pro-environmental tendencies. Larson's (2008) study in the USA exposed sharp ethnic and socio-economic contrasts in learners' attitudes towards environmental issues. In view of such issues raised in the above article, my study intended to identify the learners' understanding and knowledge of environmental issues through the socio-ethnic lenses. Environmental education should not target a homogenous school group but an ethnically heterogeneous component. In South Africa it must be adaptive in order to respond to the ethnic diversity as suggested by Coyle (2005) and not a one-size-fits-all approach.

2.9.2 Environmental Conceptions and Gender

Hess-Quimbita & Pavel (1996), reported that environmental attitudes were not based on knowledge only but also on other factors such as gender and socio-economic variables.

There is statistical gender difference with respect to attitude and interest towards the environment between boys and girls. Girls tend to have a more positive outlook towards the environment than boys do (Huang & Yore, 2004). Zelezny, Chua & Aldrich (2000), stress that boys show more inclination to take control of nature and wanting to see tangible benefits from their efforts whereas girls express a more empathetic connection to nature. One possible rationalization is that girls have been traditionally responsible for caring of homes and others, especially in a family context (Tikka, Kuitunen & Tynys, 2000). Socialisation theories propose girls have been assigned caregiver compared to boys who are assigned breadwinner roles (Blocker & Ekberg, 1997). The motherhood mentality promotes the protective inclinations towards the environment. Contrastingly though, boys develop the 'marketplace' mentality focusing on the exploitation of resources (Blocker & Ekberg, 1997). Therefore, the aim of my study was to look at the learner attitude towards environmental issues in view of such dynamics.

2.9.3 Age and learners' environmental conceptions

Kwan & Miles (1998), suggests that young learners often express attachment to their possessions (toys and belongings) contrary to older learners. High school learners show greater attachment to the nature for example favourable weather, land, air and waterways. The authors further argue that environmental concerns gradually increase and strengthen with age (Kwan & Miles, 1998). In this case, age is a factor which can influence the learner's knowledge of environmental issues.

2.9.4 Learner Environmental Conceptions and Socio-economic Issues

In Nigeria the current environmental problems have resulted partly from the increasing numbers of people which surpass the available resources, but largely from low levels of environmental consciousness of Nigerians, (Ekekwe, 1997). Ajiboye & Ajitoni (2008), revealed that the low level of environmental consciousness in Nigeria had led directly to unbridled environmental degradation, and *ipso facto*, the poverty of Nigerians as a nation. Their study revealed that poverty impacted on pollution and that pollution impacted on poverty (Ajiboye & Ajitoni, 2008). The Nigerian ecological system is rapidly deteriorating into a disaster zone (Ekekwe, 1997). Whilst the Nigerian federal state is committed to rectifying their environment through education the question remains on how to implement it in such a way that would bring about not only knowledge, but positive attitudes and actions that would arrest the looming disaster (Ekekwe, 1997). The objective of my study is to understand the learners' knowledge and attitude towards the environmental issues in view of such possible socio-economic dynamics.

Dyment (2003) at Lake Head University looked at the relationship of green school grounds and the socio-economic status of those frequenting those areas. The research was focussed on environments such the grounds and the way these are greened with a variety of plants such as grass, shrubs and trees. He explores how the socio-economic status of the learners influenced the grounds greening initiatives. The findings showed a consistent pattern indicating respondents from lower income groups value their school ground spaces more than their counterparts from richer classes. He goes on to elaborate that children from poor communities rely more on school ground for play. In these communities, the green grounds were one of the few spaces where children have the opportunity to play freely and have quality time outdoors. The middle class learners rely less on the school ground because at their homes they have expansive spatial range. These findings inevitably raise the

question: Are ground greening initiatives serving to propagate the conflict between the haves and have-nots? The article touched on the second part of my focus which is an attempt to understand the learners' knowledge about environmentalism and class which is a social justice concept.

2.9.5 Learners' Environmental Conceptions versus Environmentalism and Class

A study conducted at Haifa University, Israel by Trumper (2010) looked at how learners relate to environmental issues in developed and developing countries such as environmental racism and class. The research was conducted within a framework of environmental education for sustainability and research questions were based on the students' perceptions for the environment future, their individual engagement in the environmental protection and their interests in future jobs linked to environmental conservation. The survey was conducted with students responding on four-point Likert scale ranging least likely to most likely and the major findings were that most respondents indicated that environmental challenges make the future look daunting, however, we can still find resolutions to our environmental challenges. The findings revealed a marked influence of environmental racism and class on the learner understanding of environmental issues. The learners from previously marginalised groups such as Palestinians living in Israel territory were reluctant to care for the environment which they did not own.

The London School of Economics and Political Science looked at shaping a public understanding of the dilapidation of the environment by calculating public contribution in environmental narratives concerning Thailand's forests, Forsyth (2003). These environmental narratives were brief summaries of origins, effects and apparent resolutions for environmental setbacks. Narrative stories were selected from everyday news and articles concerning forestry and public participation was then analysed. Findings showed the rise of environmentalism in Thailand and exposed the state weaknesses in implementing environmental policies (Forsyth, 2003).

2.9.6 Learner Environmental Conceptions: Environmentalism, Race and Class (SA)

Ruiters (2001) produced an article on 'environmentalism, race and class' versus justice in South Africa's transition. The article focused on socio-spatial changes in South Africa and how environmental issues are linked to race and class. In the article environmentalism, race and class are defined as inequitable distribution of environmental quality and burdens based on subordinate income. The findings of the article reveal that previously disadvantaged and impoverished people in South Africa suffer widespread social inequalities and bad environments such as the location of dis-utilities like sewage ponds. The article brings in issues of class injustices, a concept that forms a major part of my second focus area where I intended to explore the learners' understanding and knowledge of environmentalism, race and class issues.

Harper, Smetten & Tomlinson, (2005) did a study on the health impact of pollutants, a special focus on lead exposure in South Africa. The study began by outlining how decades of apartheid rule contributed to conditions of poverty, inequity and exposure to environmental toxicants along class and racial lines. Black workers work under unsafe and unhealthy conditions for low wages and are exposed to environmental contaminants such as lead (Mathee, Khan, Naidoo, Naiker & Kootbodiens, 1996; and Mathee, Khan, Naidoo, Naiker & Kootbodiens, 2013).

The study revealed an increased level of lead present in the blood of children who were exposed to this toxic substance for example, at taxi-ranks and from industrial fumes. Other factors include exposure to lead based paints, lead plumbing and inhaling airborne dusts from dusty roads (Nriagu, 1991). New studies have shown that a relatively low lead level in the blood has devastating effects on the cognitive function on children and causes some neurological complications, (Tong, 2000). The study also revealed that occupational health safety legislation was in place, but the implementation phase has been restricted to industrial surveillance paying limited attention to the concerns of children and the poor people.

2.9.7 Learner Environmental Conceptions and Historical Influences

Kostova's (2011) study conducted at the New Bulgaria University investigated the environmental concern of grade nine students, looking at the historical development on human-environment inter-relationships and attitudes. The study was based on the

assumption that the environment rather than inherited characteristics was the principal influence on academic development and cultural advancement, a belief that a better environment produces better people. The aim was to understand the inter relationships between human activity and environment as an essential requirement for the improvement and maintenance of the ecological worth.

The conceptual framework of the study was influenced by Darwin's theory of Biological Determinism and Environmental Determinism which seeks to explain the causes for personal, social, cultural and climatic changes in a given ecosystem, (Kostova, 2011). The study took a deficit paradigm as it assumes that people have a poor overview of the environment and most of the abuse starts within and is caused by the contemporary fact that people are short-sighted and uninformed about the environment that nurtures us (Addler, 1993). In view of the above arguments, the objective of my analysis was to understand the learners' knowledge about the environment within the South African context particularly in view of the unpalatable historical background.

2.10 Changing Learner Environmental Conceptions through Environmental Education

In March 1990, the UN sponsored a worldwide conference on education entitled *Education for all- meeting the basic needs*. One of the conference's round tables was based on environmental education for sustainable development. This table looked at changing learner behaviour towards the environment. Hungerford, Volk & Ramsey (1990) presented a paper on changing learner behaviour towards the environment. Education was acknowledged as the ultimate tool that could be used in shaping human behaviour towards the environment. The paper focused specifically on how effective environmental education can promote responsible citizenship behaviour. The paper outlined the major environmental education objectives as: awareness, sensitivity, attitudes, skills and participation. The educators' challenge was to transform these goals into a reality capable of being instructional. In the field of environmental education the conventional thinking has been that we can alter behaviour by making human beings more conversant about the environment and its related issues (Hungerford, Volk & Ramsey, 1990).

The Model of Responsible Environmental Behaviour (Hines et al., 1987) states that someone who articulates an intention to take action will be more likely to take on the action

than someone who articulates no such intention. The Intent to act is an artefact of other variables acting together such as cognitive awareness, cognitive abilities and personality features. Hungerford, Volk& Ramsey, (1990) used the Hines et al. (1987) model to conclude that for a learner to intentionally act on a specific environmental difficulty, he or she must be aware of that environmental concern. Consequently, prerequisites to environmental action are knowledge and understanding of environmental issues. Another important component is the skill to appropriately apply knowledge to specific environmental concerns. The learner must also have a desire to take action and this is affected by personality factors such as personal responsibility and attitude towards the environmental issues, (Hungerford, Volk& Ramsey, 1990). Situational aspects, for example economic limitations, opportunities and social pressures may serve either to counteract or to strengthen these actions. Ownership and empowerment are also outlined in the study as important variables in supplementing knowledge and situational factors, (Hungerford, Volk& Ramsey, 1990). Ownership makes environmental awareness very individualistic. The learner acquires the concerns and sees them as extremely important at a personal level. Empowerment drives the desire to succeed. Success strengthens the internal locus of control, (Hungerford, Volk& Ramsey, 1990).

The research on the sustainability of environmental education in Thai schools (Thathong, 2005) revealed that environmental issues were not directly addressed in school based curriculums but were only indicated in some subjects. Lack of knowledge, awareness and collaboration were major hindrances in the implementation of environmental education. The environmental issues were not even addressed in most school based curriculum visions. There were no environmental based school policies and actions. The school's physical environments were not decorated to be learning resources and in most schools there was no allocated time, money and continuous support for environmental projects. The study further revealed that Thai teachers have an appropriate knowledge about the environment but the teaching methods failed to foster in children a good behaviour towards the environment (Farmer, 2000). In view of the above issues, my study intended to identify the learners' understanding of environmental issues in light of such dynamics.

2.11 Approaches to Environmental Education

Kimaryo's(2011) did a study on teachers and learners' understandings of environmental education in Tanzania. Her research was based on education about, through and for the environment. She explains this as a traditional view developed at the onset of environmental education movements. The primary concentration for education 'about' was to develop knowledge and understanding about the environment and creating environmental awareness among citizenry (Gough, 1997). In Tanzania, the teaching about the environment has prevailed for a long time and the main aim has been to distribute information about the biophysical context of humanity and the predicaments arising from human activity (Mtaita, 2007). Kimaryo (2011) points out that environmental education is more than information dissemination as the acquired knowledge does not produce behavioural change in the attitude of people towards the environment in Tanzania. My study therefore focussed on attesting learner awareness of environmental issues and the extent to which this knowledge about the environment has been translated into positive behaviour towards the environment.

Kimaryo (2011) reveals environmental teaching entails more than learning 'about' the environment, but should involve a broader perspective of the ecological crisis needing to be acquired and understood by the learners. Real life situations as basis knowledge through inquiry facilitate the interpretation of the environment (Lee & Williams, 2001). In this case research reveals that the environment should be a medium for enquiry and used as a learning source so as to increase multifaceted education and understanding. Learning in and through the environment facilitates learners the medium how to learn an aspect, in essence what modern scholars are emphasizing (Palmer, 1998).

Environmental programmes intending to encourage pro-environmental viewpoints and actions should involve activities promoting environmental restoration and increase learner participation (Hartig, Kaiser & Bowler, 2001). Scott & Gough (2003), argue that the environmental knowledge and environmental attitude are equally important in ensuring that the environment is not destroyed, but environmental attitude is non-linear in the sense that it does not rely on knowledge only but is also linked to some other aspects such as socio-economic status, age, race and gender. The missing link between environmental knowledge and attitude is the ownership which is crucial (Scott & Gough, 2003).

Active learning through hands-on activities in the environment is used in teaching and learning in South Africa, (O'Donoghue & Russo, 2004). The national curriculum in Britain encourages active involvement in problem solving and the gaining of knowledge and abilities which are necessary to protect and improve the environment. In Tanzania teachers are informed that hands-on activities enhance deep learning and understanding, but are still caught up in traditional talk-and-chalk methods (Mahenge, 2004). As in South Africa, they ascribe this to challenges of big class numbers, insufficient resources and external stress from exams and the top-down programmes. This way the learners' knowledge and positive attitude towards the environment are severely affected.

2.11 Approaches to Environmental Education

Kimaryo (2011) explains modern environmental education goes further than learning 'about' and 'in' the environment. Environmental education for the environment focuses on the aspects of ethics by aiming at the preservation and improvement of environmental knowledge through the development of attitudes and concerns in order to address various environmental problems (Lee & Williams, 2001). To consolidate this knowledge, environmental education should focus on constructing learners' capability to take action with reference to environmental concerns assuming accountability for their actions, Jenson & Schnack (1997). This has been the case in South Africa, but its effectiveness is yet to be tested and my study aimed at understanding the learner knowledge about environmental issues and what affects the knowledge development in view of such dynamics.

2.12 Implementation of Environmental Education in South Africa

The National Curriculum Statement of South African (NCS) underpins this by the values of constitutional rights, a healthy environment and social justice. Subjects across the curriculum contain substantial amounts of content related to environmental protection (NCAPS, 2010/2011). The aim is to ensure that learners are prepared to take up roles in protecting and conserving the environment. The White Paper 6 affirms that environmental education should not be confined to schools and learners, notwithstanding the formal term education, but should be considered as a relevant lifelong process for all people and a fundamental aspect of the process of socio-economic development. It emphasises the development of learners' ability to protect the environment by encouraging critical thinking

and a sense of agency-we can do something about this-attitude. This is done and built on the learners' existing knowledge and competencies (White Paper 6, 1996).

In response to the above, the 2009-2014 Environmental Agenda of the City of Cape Town adopted environmental learning as one of its crucial aims and set sustainable related targets that recognise environmental education as a tool for bringing about environmental awareness, information, education and skills development. In order to demonstrate commitment to the agenda, the city pledged 150 professional internship opportunities over the period 2009-2014. To date there have been significant positive improvements in environmental awareness in Cape Town, but the following constraints have inhibited the success story in the implementation of programmes; inconsistent budget and too little sharing of assets and backing, environmental education is sometimes underrated and frequently under supported and the unavailability of qualified staff (City of Cape Town, 2011).

Maila (2003) did a study on National Environmental Education Initiatives in South Africa and one of his major findings was that the South African National policy document acknowledges the implementation of environmental learning nationally. He outlines the following National policies as a reflection of the government's commitment to preserving and conserving the natural environment:

- The Reconstruction Development Programme (1994) policy document rekindles the population's relationship with the land and increases environmental education at all levels through empowering neighbourhoods to promote an environmental ethic and act on environmental issues.
- The Constitution of South African (1996) articulates everyone has the entitlement to an environment that is not detrimental to their health and wellbeing, and the environment be protected for the benefit of current and coming generations through responsible legislative measures that avert contamination and support conservation, secure ecologically sustainable social and economic development.
- The White Paper on Education (1995) outlines an interdisciplinary integrated and active approach environmental education in order to create environmentally literate citizens (SA, 1995).

- The NEMA (1999) policy document emphasises that the wellbeing and empowerment of the community must be promoted through environmental education, and the Revised National Curriculum Statement (2007) stressed the integration of the 'environment' to all learning areas.

The above stated national documents clearly indicate that South Africa through its education system is attempting to give learners an opportunity to construct meanings in their social contexts that give value to socio-political and economic dimensions of environmental issues. The challenge lies with the educators who are expected to challenge learners' superficial understandings of environmental issues (Lotz-Sisitka, 2000).

2.13 Challenges in Implementing Environmental Education in South Africa and Africa

2.13.1 Challenges in South Africa

Maila (2003) raises these issues as impediments to the implementation of Environmental Education in South Africa: 1) Environmental learning is viewed by teachers and learners as an extra-curricular activity or an add-on; 2) Lack of support from the school management team. Principals are engaged in management issues and therefore do not have time to support learning and teaching of non-examinable subjects; 3) The intensive nature of the assessment procedures make it difficult for educators with large numbers of learners to provide an environmental education of high quality and 4) Large numbers of learners in former black schools put constraints on the assessment strategies that can be used. In view of the above arguments, my aim was to understand the learners' knowledge about environmental issues in view of such dynamics.

Ljunggren (2011) produced an article based on environmental issues (constraints and possibilities) in South Africa at Langelihle Township, Eastern Cape Province. The objectives of the study was to analyse how the school management engaged in environmental issues and how that can be bankrolled into promoting values, attitudes and lifestyles for sustainable development among learners. The study looked at how projects in schools motivated learners' environmental awareness and ability to act pro-environmentally. The projects identified in most schools were recycling, environmental awareness clubs, vegetable gardens and greening initiatives. The findings revealed that dealing with environmental issues in poor communities was a challenge since more urgent needs such as

food and adequate livelihood was often prioritised. Therefore taking environmentally sustainable actions was often considered a luxury in many poor areas, (Ljunggren, 2011).

The study acknowledges that the decision making concerning environmental projects was characterised by a model of top-to-bottom process. Usually, the government departments decide on projects the individual schools should implement and the implementation is prescriptive ignoring and leaving out the nature, culture and texture of the context. These top-to-bottom projects are usually resisted and not given the utmost seriousness they deserve. In view of such dynamics, my research aimed at understanding the learners' understanding of environmental issues.

2.13.2 Political Instability and Implementation of Environmental Education

Risiro (2014) carried out a study to evaluate the carrying out of environmental education programmes in Zimbabwe. Zimbabwe designed the curriculum in a way to help learners develop the concepts, values, attitudes and skills necessary to support sustainable living and environmental management, (Environment & Tourism Ministry 2003). This approach shows that environmental education in Zimbabwe is concerned with both the management of the natural environment and the contribution of man in the sustainable use of the environment. The human element in this study focused on aspects such as culture, attitudes and values towards the environment (SADC-IUCN, 1999). The findings made known that the implementation of environmental education in Zimbabwe has been infused and implemented variably across the curricular but the programme has been set back by problems ranging from lack of enthusiasm, political instability and lack of support from the government due to financial constraints, (Risiro, 2014).

2.14 Conclusion

The South African education sector has made a great deal of progress since 1994 and improvements since 1999, such as the addition of environmental consciousness in all learning spheres in the General Education Band (GET) are particularly laudable, (Revised National Curriculum Statement RNCS, (2007). However, the literature above testifies to shortfalls in the implementation of environmental education in schools throughout the

world and South Africa is no exception. The complexity of South Africa in particular is that it has a potential of being the First world because of the multiplicity of resources, yet large proportions of citizens live in third world conditions because of mainly apartheid contours and unfulfilled post-apartheid promises, (Mathee, et al, 2013). There are indications that suggest the quality of environmental tutoring is substandard and inadequate. Although legislation and policies are in place for the operational implementation of environmental instruction learner understanding and knowledge is still reasonably low. Outdoor pollutants such as emissions from refuse burning and dust as well as rotting organic matter are still a problem in most households, (Thomas, 1999). When waste is not managed or disposed of adequately, it becomes a severe health hazard to children living near refuse dumps. The removal of other types of refuse is still of paramount concern in South Africa (RSA, 2008).

In view of the above literature in general and South Africa in particular, the questions that one must seek answers for are: what are the learners' ecological understandings of environmental issues? What are the contextual dynamics that affect the learners' ecological understandings of these environmental issues? And how do learners navigate environmental issues from a schooling context?

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

A review of relevant literature around the environment and environmental matters was discussed in the previous chapter; providing an understanding of learners' perceptions and misconceptions about the environment. The conceptual structure and research design viz. the context; participants, data collection methods and process for data collection are presented in this chapter.

3.2 Conceptual Framework

3.2.1 New Childhood Studies

In past decades, childhood theory was articulated challenging the psychological theories such as Parson's socialization and Piagetian child development which presented adults as mature, rational and competent, whereas children were perceived as "less than fully human, unfinished and incomplete" (Jenks, 1996). Recent childhood studies however, introduce the concept of 'children's geographies' and portray children as 'active social agents' who are capable of making informed, logical decisions and conclusions about their lives and experiences (James & Prout, 1997; Muthukrishna, 2013). Childhood should not be understood as an apprenticeship for adulthood that can be charted through the stages relating to stages relating to ages, it should be seen as a biological fact of life that needs to be understood in terms of nature (James & Prout, 1997). Childhood is seen as the accumulation of social relationships that are negotiated within the conditions where children are respected and acknowledged as masters of their own destinies (James & Prout, 1997). Located within the new childhood studies is the concept of children's geographies.

3.2.2 Children's Geographies

Children's geographies, as they are located within the concept of childhood studies, focus on the relevant spaces and places of children that affect them politically,

experientially and ethically (Muthukrishna, 2013). Van Blerk (2005) states that to understand the experiences of a child, one need to delve into their physical space i.e. their home, school and community, as well as their emotional space – their ‘being’. This approach offers children an opportunity to represent their own experiences without researchers visiting key space and places. The spaces of dissemination are discussed by children themselves and this enables them to compare and contrast those different spaces.

In this study, the school and the home are considered as significant spaces in the lives of the participants as regardless of being the places where children spend time, the school and the home are also environments over which they have no or at best very little control since they are structured according to specific institutional processes (Fendler, 2001). One issue demonstrating the impact of space for children is the process of gaining access to study for the children, which is done through gatekeepers i.e. teachers, parents, principals and local educational authorities who are entrusted with children and make basic decisions for children such as to whether they may talk or not.

The home and school environments display the authority that gatekeepers wield in terms of affording access to children and indicates that gaining access to work with children is not spatial but rather in the policies of access there is a complex spatiality (Ansell, 2009). Children’s geographies ensures confidentiality for respondents and further challenges arise in sustaining confidentiality relating to the children’s position in society and the spaces where they spend their time (Matthews, Limb & Taylor, 1998).

The school is therefore a place where defining questions are considered and negotiated as children construct and interpret their own social world and this was my ontological and epistemological standpoint on childhood and children as I set out on this study. There is a close affinity and relationship of this approach with the agenda for the UN Convention on the Rights of the Child (UNCRC). Children are seen holistically as human beings in their own right with a generational and social class in all their civil, political, cultural and economic dimensions, (Muthukrishna, 2013).

In an attempt to understand the learners’ environmental awareness, that is, their legalistic notions of environmental rights and justice versus the indiscriminate siting of e-waste, toxic contamination, sewage ponds situated in areas around poor communities,

pollution and land degradation, the study sought to understand how students position themselves in relation to the social justice issues. In my investigation, I went further and attempted to understand how learners understand issues of the environment, race, class and environmental equity in view of the Bill of Rights, Section 24, that decrees that everyone has the right to an environment that is not detrimental to either their health or wellbeing, (RSA, 2008).

The fundamental objective of children's geographies is to promote mechanisms for child-centred research while creating opportunities for them to voice their experiences. By using this approach the child's safety, combined with the imbalanced gatekeeper-child power relations, produces highly sensitive and distinctive encounters with children and the response by scholars has been to engage in more reflexive discussions and insights regarding accessing, confidentiality and power relations during the interview process.

Kay & Tisdall (2012), state that children's agency has been fundamental to the developments of children's geographies, thus children's geographies were central to the nature of my study as previous research has shown that they create a stability between their welfare and their participation, vulnerability and agency. This is explained in detail by the critical paradigm.

3.2.3 The Critical Paradigm

Critical environmental education theory:

This is a capacity to express the multitude of ways in which societies and cultures unfold and develop ideological trends that either lead towards sustainability or extinction, (Darder, et al., 2009). Critical environmental education is informed by the critical theory and sees education as the primary institution that can affect social and environmental change and seeks to help individuals recognise their own critical environmental literacy containing an array of transformative energies and liberatory potentials competent of affecting the future. This theory is embedded in the critical paradigm which is explicitly prescriptive and normative; delineating the behaviour that is considered acceptable in society (Ansell, 2009). It seeks to identify false and fragmented consciousness that has brought to an individual or

social group, a sense of powerlessness and questions the legitimacy of this consciousness (Eagleton, 1999). It is an attempt to understand social reality viz. the power operations and dynamics for the purpose of emancipation and transformation and argues that certain behaviour is the outcome of particular legitimate or illegitimate repressive forces; illegitimate in the sense that they do not operate in the interest of the general populace (Cohen, Manion & Morrison, 2011). Critical theory aims to transform society and individuals so as to achieve a social democracy. Thus, within this study, the critical paradigm theory helped unpack the power dynamics that affect the learners' ecological understandings of environmental issues.

3.3 Research Design

This research was framed and guided by a qualitative paradigm which is an approach characterised by in-depth, detailed understandings of meanings, actions, observable phenomena, attitudes, intentions and behaviours (Cohen et al., 2011). A qualitative approach was chosen because this research study relied on the views of participants (students) about the environmental issues and those views were then analysed. The key component of a qualitative researcher is that she/he studies experiences in their natural locations and attempts to make sense and interpret the experiences in terms of the meanings people bring with them (Denzin & Lincoln, 2005). This qualitative paradigm involves the collection, analysis and interpretation of widespread narrative information in order to gain insights to a specific aspect of interest and in this case that would be the learners' views about environmental issues.

The research was a narrative inquiry which is a multifaceted process that encompasses all dimensions of humanity such as cultural, physical, political and environmental and is based on the principle that people are guided to act by their socio-economic relationships in which they find themselves embedded and through stories; they construct their identities (Riessman, 1993). The use of a narrative inquiry was influenced by my desire to gain a rich and deeper insight of how learners position themselves with regards to environmental issues such as the disproportionate exposure to pollution, land degradation and environmentalism, (in part this is the leftover of the pre 1994 race and class policies). This study therefore provided the learners with a medium to tell their

narratives about environmental experiences and how they negotiate their day-to-day lives under specific environmental issues.

3.3.1 Sampling and Participants

It is said that the quality of research does not depend wholly on the suitability of methodology and instrumentation, but also the suitability of the sampling strategy that has been implemented (Cohen et al., 2011). With this in mind, the participants of this study were six learners from grades 10, 11 and 12. In a qualitative research, non-probability (purposive) sampling is used and there are no clear rules that guide the size of the sample and in my case, the size was informed by the 'fitness of purpose' , there was no desire to generalise at the end. The learners in these grades were chosen from life sciences classes which are exposed to environmental education and the group was stratified by gender.

Learners/children were used in this investigation because they were of a group that was considered decidedly susceptible to the effects of environmental hazards both now and in the future (UN, 1992). If children are to effectively participate in environmental activities they should be possessing substantial knowledge gained through environmental education, (Ansell, 2009).

3.3.2 Data Generation

The modern world has experienced a social shift linked with technology (Facebook, Twitter, WhatsApp) and globalization with fascinating documentation increasing the "self" biographies as it has become easy to keep in contact with people of similar interest and one can create personal pages with minimal technical skills and at low cost. In view of such developments, narratives have become the most basic way humans have of apprehending the world, (Cohen, et al, 2011). The research methods used were: photo voice and transect walks, also individual and focus group interviews. The semi-structured individual and focus group interviews elicited information from the learners of which a list of fairly specific questions were scheduled, but the interviewees had a great deal of leeway on how to reply (Cohen, et al, 2011).

3.3.2.1 Focus Group and Individual Interviews

When conducting interviews, there was much greater interest in the interviewees' point of view, consequently, participants were allowed to go off tangent as that gave insight into what they saw as relevant and important. As a result, the interviews tended to be flexible responding to the direction in which the interviewees took it and that provided an opportunity for the researcher to gain rich and detailed expressions.

Using interviews as a data collection method further enabled participants to air their opinions, beliefs, perceptions and attitudes towards environmental issues, environmentalism, race and class. The questions were presented in an interactive group setting where the learners were able to talk freely with other members with minimum intrusion by the researcher. In this manner, a large concentrated range of data was collected within a short space of time. All interviews were recorded using an audio recording device and participants' photographs were used to augment the interviews as well as to offer the interviewees an opportunity to voice their experiences.

3.3.2.2 Photo Voice

This is a process by which individuals can represent, identify and enhance their perspectives through a specific photographic technique that entrusts cameras to the hands of learners to facilitate them to act as recorders and potential catalysts for social action and change in their communities (Wang, 2003). Photo-voice provides a platform for marginalised communities to represent themselves and put forward their views by presenting the world as they see it (Morojele & Muthukrishna, 2012). The photovoice concept developed initially by Wang and Burris (1997) in China is the appreciation of the critical consciousness and this helps to shape our concept of what is real and normal. This method is more participatory than conventional research approaches, combining grass root approaches with photography and enables the learners to voice their opinions through photos and discussion (Budak & Taylor, 2007). This method does not discriminate against learners who cannot read or write because images can speak louder than words. Instead it incites discussion that can ultimately bring forth social change through dialogue (Budak & Taylor, 2007).

Photo voice uses the immediacy of the visual image and accompanying stories to furnish evidence and encourages an effective and, participatory means of sharing information. This circumvents the misrepresentation of fitting data into a predetermined

paradigm; through it we comprehend how individuals make meanings or construct matters. It is not simply shuffling information around, but empowers learners to reflect on their community (Wang & Burris, 1997) as photographs carry meanings that words alone cannot; be they spoken or written.

The photo voice method was appropriate to meet the intentions of the research as the goal was to determine what the learners – individuals who are not necessarily made to think about environmental issues daily – recognise and interpret as environmental problems. Photo voice allowed participants to actively engage in an interactive way identifying environmental problems around their community. This process raised awareness in participants about the environment around them and gave learners an opportunity to tell others about their environmental awareness. Photo voice participants gained valuable skills in reflecting on the realities of their lives, developed skills on reflecting on environmental issues, expanded knowledge of how the individual experience was ‘part’ of the whole, learnt skills in critical thinking and analysis, gained self-confidence in their ability to assess ideas and engage in self-support and developed an enhanced insight of the influence of socio-economic status in the distribution of resources (Caffett, 2013). Interviewees were given disposable cameras and requested to document their photo-visuals in transect-walks. This was done in order to triangulate the data collected through focus group and individual interviews.

3.3.2.3 Transect Walk

A transect walk is one along a suggested alignment and can be used to describe and show the location and distribution of resources and land use. It is used in most cases to identify major environmental problems and works as an information-gathering exercise. The key information required by the participants is: Where to start, what to see and where to end? The walks helped to verify the information provided earlier by learners through photo voices and focus group discussions. The walk maximised the opportunities for interaction and was highly participatory and relaxed and was also useful in validating findings of the focus group and individual interviews. The interviewer and the interviewees identified the starting point and the finishing point across the community. During the walk, the

interviewees took notes and photographs of relevant environmental features and these notes and photographs were discussed during focus group interviews.

3.3.3 Data Analysis

Data analysis entails the organising, explaining and accounting for the data in order to make sense of the participants' understanding of situations. The data collected through semi-structured interviews, focus groups and visual photographs are often heavy on interpretation since out of the same set of information, there are frequently multiple interpretations (Gibbs, 2007). To make analysis easier, the collected data was transcribed, coded according to similarities and those identical issues were then categorised and amalgamated into key themes that emerged from different individuals. The main themes that emerged from the interviews are: learners' conceptions of environmental issues; learners' knowledge of the environment and the foundations of that knowledge; environmental issues at school; socio-spatial issues and environmentalism in South Africa, environmental issues and gender; community environmental issues and learner participation in environmental programmes. The photo-voices tagged with captions of owners were used to augment the data collected through semi-structured individual and focus group interviews. The final analysis was done guided by the research aims.

3.3.4 Validity and Reliability

Using qualitative research the inquirer can only persuade his audience that the research findings are credit able and the results are reliable and valid (Lincoln & Guba, 1985). These terms validity and reliability are usually common in quantitative research but in the same vein, words like credibility, conformability, consistence, trustworthiness, dependability, applicability or transferability are essentially used as criteria for a qualitative study (Lincoln & Guba, 1985).

Reliability refers to dependability and trustworthiness refers to validity. In qualitative research, trustworthiness or validity can be maximised in order to ensure that credible and dependable results are obtained by triangulating individual interviews and focus groups

interviews by eliminating the uncommon features and this may lead to generalizability, though the latter is commonly used in quantitative research. This can be done through ensuring that the data collected is reported with maximum accuracy (Strydom & Delport, 2011).

In this research I ensured that simple and unambiguous statements or questions were used in order to get accurate and straightforward responses that were not vague. Modern cameras and audio tapes were used to capture voices audibly during interviews. The tagged photographs with word captions that were transcribed accurately were discussed with the participants to ensure that the final piece of work does not carry misrepresentations. This way the issues of validity and reliability were addressed.

3.3.5 Design Limitations

The major limitation of this study was most probable from my positionality as part of the community that is exposed to environmental issues such as the disproportionate exposure to water and air pollution and also a victim of these environmental hazards. This might have brought about the crisis of legitimation (trustworthiness and authenticity) and crisis of representation (researcher separation from the researched) (Denzin & Lincoln, 1998). In order to reduce that crisis, every attempt was made to engage continually with the theoretical framework to prevent any sidestepping from what was theoretically sound. Interpretations and analysis were interrogated by my supervisor with the hope of eradicating any bias and ensuring that a sound data presentation was made.

3.3.6 Ethical Considerations

Qualitative data analysis is by its very nature concentrated on individual cases and may sometimes contain private and sensitive issues that can cause injury to participants and hence the issues of identifiability, confidentiality and privacy of individuals must be considered at all times (Cohen et al., 2011). Since this research involved children who were minors (under 18), it was therefore my responsibility as a researcher to ensure that this

process does not harm participants. Parents'/guardians'/caregivers' and the educational authorities' consent was sought before approaching the learners. Learners themselves were not coerced into participating; they were only encouraged to do so but the decisions to be involved and when to withdraw was entirely theirs (Cohen et al., 2011).

Though the permission of their parents or legal guardians was granted, an effort was made to address the power imbalances between adults and children by continuously rehearsing with the latter on how to decline or withdraw and by doing so it gave the learners a sense of control (Kirk, 2007). My research also addressed the following ethical issues:

- Participants' informed consent was guided by the following three factors; comprehensible information, voluntary participation and competence (Kirk, 2007)
- The participants' rights to withdraw at any stage and the parental consent were emphasised.
- Monetary compensations were given to participants during travelling outside their living areas at the same time ensuring that the reimbursement was not an incentive to participate.
- Confidentiality: participants were advised that their names were to be kept anonymous and that their faces on photographs were to be blurred so that they cannot be identified.
- Permission was sought from other stakeholders namely the principal and department of education since this project was carried out using the school going children.

3.4 Conclusion

The chapter located the research undertaken within the guiding conceptual framework and presented the methods of the study and the research methodology. The following chapter discusses the findings of my research study.

CHAPTER 4

PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Introduction

The research examined environmental problems from the perspective of learners. It also sought to identify school and community practices. The study investigated what learners' environmental conceptions are and how these are developed. It also explored the extent to which environmental education shapes their environmental awareness, attitudes and behaviour. To gain an understanding of the learners' knowledge of the environment and environmental issues, the study set out to investigate the social geographies by focussing on:

- Learners' understanding of ecology and environmental issues,
- Their vision for the future of the environment as well as their engagement with and contribution to the environmental protection.

The study was positioned within the concept of Children's Geographies and argues from the sociology of Childhood studies where children are seen as active agents constructing and creating their own lives, (James & Prout, 1997). This chapter presents and discusses the findings obtained from this study. Excerpts of the transcribed data of interviewees as well as photographs taken by participants during a transect walk which were coded and analysed in an attempt to address the following research questions:

- What are school learners' ecological understandings of environmental issues?
- What are the contextual dynamics that affect high school learners' ecological understandings of environmental issues?

- How do learners navigate environmental issues in the context of a high school?

The coded data yielded various issues which were then categorised into three broader themes that illuminated the research questions. These themes are: the consequences of apartheid and post-apartheid policies, basic service deliveries and the curriculum and environmentalism. These themes are broken into subtopics and discussed in detail offering insight into how learners frame their ecological understandings of environmental issues. The chapter concludes with a discussion on learners' resiliency and agency.

4.2 The Mophela Community: "A Neglected Island"

Learners described the Mophela community as a rural community which is sparsely populated and administered by the traditional chief. They indicated that community members still rely on traditional subsistence farming methods but these are gradually being abandoned as the youth move out of the area seeking employment in the nearby farms and chicken industries. Mophela community is situated west of Durban central business district. Some community members walk daily to the nearby suburban townships and industries for employment and other social services such as clinics, schools and libraries. The settlements are poorly organised and isolated beyond the reach of social nets and poverty alleviation programmes. Learners cited the lack of basic services such as electricity, water, sanitation, an unreliable garbage collection system, improper roads and poor houses as causes for concern.

Mophela is a rural area located 7km outside Mpumalanga Township. The community living in this area is generally poor and the stands that we live in belong to the traditional chief. The stands are not serviced and that means no one owns the land, even the forests belong to every community member. We used to grow maize and beans for our livelihoods, but now everyone is seeking employment from the nearby farms and chicken industries. [Ngcebo]

Mophela area is like a neglected island which waits to be discovered. We do not have proper housing units; our roads are poor, dusty and unpaved. Garbage is

scattered all over. This is bad, but we can't do anything, we are powerless.

[Sizane]

4.3 A Legacy of Apartheid

Learners described the Mophela community as an apartheid construction. The learners revealed that the conditions they are facing today are linked to apartheid policies and the apartheid era. They blamed the apartheid system at the same time and not sparing the post-apartheid system. The area was originally created and set apart as a source of farm labourers, as a result no up-to-date schools and clinics were built for the community. Retired farm labourers were also relocated to this community as a temporary measure; temporary structures served as shelter/housing. The community members were not perceived as people – hence the location of sewage ponds. Chiefs were appointed by the apartheid government to monitor the villagers. The land in this area is still not serviced, the learners said, and the occupants are not legally the owners of the stands as there are no legal documents like title deeds that can be used as collateral. The post-apartheid government's promises of correcting the imbalances are still yet to be realised by the community more than twenty years after independence. The dis-utilities such as sewage ponds are still part of the community and villages perennially exposed to the pungent smell from the sewage treatment works.

This village is like an island as it is surrounded by farms; it was the source of farm labourers during apartheid times. Most of our brothers and sisters work in these farms. The then government appointed chiefs called indunas to monitor the activities of community members. Houses were only built to shelter the potential farm workers. Nobody cared about our community before independence, we were not considered as people as you can see that sewage ponds were located right in the middle of our community. After independence, the government promised to correct these colonial imbalances by building schools, clinics, libraries, proper roads and proper subsidised houses called "imxhaso". So far only schools were built and this is twenty years after independence. [Nana]

It seems as if this place was meant to be a temporary shelter for farm labourers, if it was meant to be a dwelling place, then why were sewage ponds located within the area where people live. [Ngidi]

4.4. Post-Apartheid Empty Promises

The learners stated that as a community they have shared their grievances with the government; the post-apartheid government has not been responsive in addressing the socio-environmental problems experienced by the community. In 1994, they were promised water, proper sanitation, proper houses, tarred roads and the removal of the sewage ponds within the community, but twenty years later the leaders continue to blame apartheid for their failure to deliver on these promises.

We have done everything as a community to air our environmental grievances to the government, but nothing has materialised. The environmental problems that we have today are older than us. Its promises after promises, but nothing materialises. Most people have left the area to live in better townships. When the leaders address us they always blame the apartheid governments, but this is twenty years after independence. The river which is the source of water for us and our cattle is heavily polluted by discharges from the farms and sewage leakages creating a sudden growth of algae that chokes life in the river system. [Ngidi]

People have no money to build proper housing units as a result they resort to cutting down trees in order to build their houses. This creates some environmental problems like desertification, but what can we do? We know the implications, but we can't do anything about it. People also poach construction sand from our community leaving the soil exposed to erosion agencies such as run-off and wind. Villagers use what is available in order to survive. [Nana]

Decades of apartheid rule in South Africa contributed to conditions of poverty, inequity and exposure to environmental hazards along class and racial lines (Mathee et al., 1996). The legacy left the rural areas mono functional, lacking growth and bound people to fixed assets (land) that they are not permitted to sell or rent. This created poverty traps,

(South African Cities Network, SACN, 2011). Ruiters (2001) reveals that people who are predominantly poor today still suffer worsening and widespread social inequalities and environmental neglect by the post-apartheid local governments.

The narratives indicate that colonial and apartheid policies of racial segregation left a daunting legacy of a fragmented society with unequal access to amenities and public services concerning the rural and urban areas, (Economic Development Department, EDD, 2010). While the attainment of democracy in 1994 theoretically opened the door for equal opportunities of all South Africans regardless of race, twenty years after the official end of apartheid, the country still tussles to rectify the inequalities created by decades under that system. Learners' narratives indicate that the apartheid system left a country socio-economically divided, with the Africans, particularly blacks exposed to environmental hazards whilst whites and the rich living in leafy suburbs free from environmental burdens such as the sewage treatment ponds. Subsequent government policies have sought to correct imbalances through state intervention with varying degrees of success, (EDD, 2010). The question is why have poverty eradication and correction of past anomalies not been a success story? The notion of apartheid legacy is not fully useful in explaining why rural communities such as Mophela still remain entrenched in poverty and exposed to environmental hazards such as sewage ponds, river pollution and land degradation today twenty years after attaining democracy. Is it possible that the Mophela environmental problems are driven by the same apartheid system that was in control as far back as during the 1970s? Or these drivers can now be understood in terms of power configurations and socio-economic relevance of the area (EDD, 2010). I think as much as the apartheid legacy cannot be ruled out in explaining these issues, but the socio-economic relevance is playing a major part in keeping Mophela 'a neglected island'.

The learners' narratives suggest that their perceptions and construction of their community and the environment are shaped and influenced by socio-economic factors at the same time revealing the limits of individual action. Narrators were able to expose marginalisation and neglect, reflecting the spatial inequalities that still exist between the haves and have-nots in the South African population spectrum, (Kay & Tisdall, 2012). Simply

exposing exploitation cannot be identified with the authentic condition of critical conscientization, unless there is a deliberate action driven towards total emancipation, (Kay & Tisdall, 2012). The socio-economic issues and inequalities such as lack of proper housing and unpaved dusty roads raised by the learners has been the case since apartheid times, (EDD, 2010).

In order to survive in a market-driven society, poor villagers indiscriminately cut down trees for timber and also poach construction sand to use as materials to build shelter. This then creates environmental issues such as erosion and land degradation. The narratives above indicate that children today in South Africa and other developing countries face rapid industrialisation and development caused by man's shift from subsistence communal life to commercial urban life, (Lumadi & Sethusha, 2013). The shift to what is considered to be quality life has affected the environment; people cut down trees for timber, burn fossil fuels and garbage, overgraze and pollute the land and water, all without recognising that such activities despoil the quality of nature. The deterioration of quality environment because of man's irresponsible environmental carelessness has snowballed into a decline in civilisation eventually causing a deterioration of man's standard of living, (Lumadi & Sethusha, 2013).

4.5 Environmental Destruction

The learners indicated that the current environmental issues and problems bedevilling the Mophela communal area cannot be explained without mentioning the apartheid past. The cutting down of trees, sand poaching, garbage disposal system, water pollution were cited as the common environmental problems in the area. Topping the list was the sewage treatment ponds processing sludge from the industries and the township which were located within the community by the apartheid government, (Durning, 1990). These ponds are an environmental problem and a burden to the community. It is a disgrace that twenty years after democracy some apartheid contours are still visible. The learners cited that some environmental issues and problems range from apartheid era to current poor service delivery.

4.5.1 Sewage Ponds: The Stench and River Pollution

When learners were asked about the thorny environmental issues and what they expected from the government, they were quick to mention that they needed the water

carriage system types of toilets that would flush/drain their waste into the sewage ponds that are situated within their community. They still use pit-latrines yet the sewage treatment ponds processing waste from other affluent communities are located within their community.

We need proper water-carriage toilet system, at the present moment we use small pit latrines and I like nothing about these kinds of toilets. They are smelly and very unhygienic. Sometimes flies spread some stomach complications. Everything is just bad about these kinds of toilets. It is like the toilets are breeding places for bacteria, but there is nothing that we can do because that's all that we have. People are always sick because of these toilets. I cannot understand why the government is failing to build us flush toilet system. The sewage treatment ponds are within our community processing the sewage from the affluent community situated more than...ten kilometres away. [Nana]

The following photograph was taken by **Nana**. It is all that they call toilet at home serving over ten people in a family.



FIGURE 1: THIS IS OUR PIT LATRINE AT HOME; SOMETIMES IT PRODUCES AN UNBEARABLE SMELL AND IS ALSO A BREEDING PLACE FOR FLIES. THIS IS UNFAIR AND BAD

On how they felt about the sewage oxidation ponds that were located within their community learners had this to say:

The sewage ponds located within the community are a cause for concern. The smell from these ponds is just unbearable and no one can justify why these sewage treatment ponds were located within our community yet we do not use water carriage toilets. [Ngcebo]

We have the sewage ponds that are located within our communal area and these ponds treat sewage from the township five...or so kilometres away from our community but we are exposed to this filthy smell every day. The government must build us the water carriage system toilets as it has done in township communities. We are also South Africans; we should not be treated differently, in townships the municipality built toilets for everyone. [Mhlengie]

Mhlengie provided the following picture of water containing human excrement flowing into the river system to support his argument,



FIGURE 2: THE SEWAGE PIPES SOMETIMES BURST AND LEAK HUMAN EXCRETA INTO THE RIVER SYSTEM CAUSING DIARRHOEAL DISEASES AND A STENCH WHICH IS UNBEARABLE. THIS IS REALLY BAD.

I think the government must build us proper drainage toilets that will deposit the sewage in the sewage ponds where it can be treated so that it does not cause any diseases. I don't think this process would be expensive because we already have sewage ponds within our community that are treating the sewage from other places. [Ngidi]

The location of sewage treatment ponds within the Mophela area seems to be a major environmental concern within the community. Why are these ponds not anywhere near the affluent communities? This is a cause for concern and I believe it is socially unjust. The National Environmental Management Act (NEMA) of 1998 states that “adverse environmental impacts such as dumping sites and sewage ponds shall not be distributed in such a manner as to unfairly discriminate against any persons, particularly vulnerable and disadvantaged persons”. The Bill of Rights states that “everyone has a right to an environment that is not harmful to their health or wellbeing and to have an environment protected for the benefit of present and future generations through legislative and other measures that prevent pollution and ecological degradation and promote conservation” (Bill of Rights Act 18, 2000).

The irony here is that millions of people in South Africa lack safe water and sanitation and these environmental hazards impose costs such as lost work days due to illness and shorter lifespans apart from other immeasurable losses (Durning, 1990).

When asked about the environmental effects of these sewage ponds located within the community, **Ngidi** provided the following photograph to support his argument:



FIGURE 3: THE UMLAAS RIVER WHICH IS THE SOURCE OF WATER FOR US AND OUR DOMESTIC ANIMALS IS CHOKING TO DEATH BY ALGAE PLANTS BECAUSE OF HIGH LEVELS OF WATER POLLUTION. THIS IS EUTROPHICATION AT ITS HIGHEST LEVEL.

The sewage ponds located within our community consist of old pipes that are worn out and sometimes the raw sewage leaks into the river system causing a sudden growth of algae plants resulting in serious eutrophication. Aquatic flora and fauna die as species compete for oxygen under such conditions. We used to fish from Umlazi River and now there is no more fish. [Ngidi]

The narratives and the photograph shows that spatial injustice is often taken for granted if injustices are committed against the poor and socially marginalised populations. When the voiceless children were given an opportunity to speak about their environment they strongly identified the location of these sewage ponds as unjust and a health hazard to the community. The issue of environmental justice in the above narratives highlight the cultural racism contours of colonial injustices inherent from the apartheid system. Twenty years after the formal dismantling of apartheid, the black majority are still in these dangerous unsanitary spaces. The bucket-toilet system better known as pit latrines were outlawed by the ANC-led government in 1994, (Ruiters, 2001). The legal perceptions of environmental rights and justice stress litigation against the unauthorised siting of disutilities such as the sewage ponds and unconstitutional practices, however, the reality of this is that litigation can only occur after an event. Furthermore the high costs of litigation

and expertise required to successfully engage in the legal system discourages activism. The rural poor communities such as the Mophela people have no resources and expertise to prove their cases of environmental racism or demonstrate that a particular source of polluting is to blame, (Ruiters, 2001). Furthermore, the pursuit of justice through litigation does not address the injustice, instead it instantiates it as the courts are the sanctity of contracts and help to keep people passive and reliant on the state, (Ruiters, 2001).

Ruiters (2001) on environmentalism, race and class versus justice in South Africa's transition, states that socio-spatial changes in South Africa and environmental issues are linked to race and class. The findings of the article reveal that largely blacks and poor people in South Africa suffer worsening and widespread social inequalities and bad environments such as the location of dis-utilities like sewage ponds and evidently these pre-independence contours are visible at Mophela community. The issue of class injustices which the narrators revealed is exacerbated partly by the post-apartheid unfulfilled government policies and the failure to deliver on basic services.

4.5.2 Sand Poaching and Land Degradation

The learners narrated that the old ramshackle Lorries that make a beeline from Mophela area with loads of Umgeni building sand as giving testimony of an environment that is under threat of massive degradation. Learners indicated that hideous gullies and craters are the only remnants that remain of their once beautiful area. The sand is dug to construct beautiful houses in leafy suburbs. Locals in Mophela who occupy vast pieces of land sell the sand in order to sustain their families. The learners stated that this is how some families eke their livelihoods as jobs are hard to come by.

Another environmental issue that is common within our community is that of land degradation through sand poaching. Some people who occupy vast pieces of land sell the building sand to the building contractors. Scoopers excavate land filling trucks with Umgeni building sand. This process leaves behind three issues: the first one is that the disused excavated land collects water during the rainy season posing danger to children who see this as recreational facilities for

swimming. These mini ponds also become breeding places for mosquitoes and that is a health hazard. The second issue is that the soil is left bare after excavation making it prone to erosion agencies such as wind and water run-off. The third issue comes when wind causes a lot of dust. We inhale a lot of it consisting of toxic metals such as lead. [Mhlengie]

Mhlengie provided this photograph after his narrative.



FIGURE 4: SAND POACHING LEAVES THE SOIL EXPOSED AND PRONE TO EROSION AGENCIES

On the same issue of land degradation, **Sizane** had this to say:

Sand poaching leaves the soil bare and this promotes erosion that results in the formation of gullies that are now threatening our homes...at home our houses will be soon swept away by run-off and we are not safe at all. [Sizane]



FIGURE 5: OUR HOMES WOULD SOON BE SWEEPED AWAY BY THESE DEVELOPING RIVERS, IT'S REALLY BAD

The above narratives clearly indicate the violation of basic human rights of the people of the Mophela community and in order to survive, they tragically engage in environmentally destructive tendencies as cited by the learners. Sand poachers are wreaking havoc in the area causing serious environmental degradation with the area slowly turning into gullies. Though the learners have expressed serious concerns about their environment turning into an eyesore, but they are quick to defend the perpetrators by grudgingly stating that they are making a killing at the expense of the environment. This could be related to neo-colonial conditions that could be rightly asserted to politically hegemonic practices constituting global family terrorism meant to oppress the already oppressed (Kahn, 2007). These environmental disasters resulting from economic exploitation and unsound environmental practices require much deeper eco-literacy followed by community based environmental action.

4.5.3 Tree-felling

The learners reveal that the current destruction of the environment is driven by poverty. Most villagers are poor and cannot afford modern building materials as a result they resort to cheap timber from the forests consequently creating deforestation and dangerous muddy houses. Service delivery demonstrations have been unsuccessful as they are sometimes labelled and called names. The learners indicate that the deterioration of the quality of nature is visible and experienced by everybody. For them, the dilemma is witnessing the destruction of the environment whilst on the other hand the socio-economic factors render them powerless to act against the destruction.

A learner explained:

Sometimes it is painful to see people recklessly cutting down trees to build their new houses...yes it is good to build a house, but what will happen to the future generation which will live without these trees because somebody sometime destroyed all the forests in order to build his own? This is bad, it is very bad...what else can we do we are poor and cannot afford good houses, therefore wood and mud houses are the only solution? My parents were promised houses by the government since ...I don't know, but till today nothing has come up. We are stuck here indefinitely...When we demonstrate they call us names. We inherited a bad situation. [Ngcebo]

According to this learners,

... people cut down trees not because they want to, but this is all that they have. You see people around our community are poor and the environment or forests around is all that they have. We have been promised houses by our local political leaders and all that ended in rallies and meetings instead we are discouraged from building small structures as outdoor houses...they say these structures are unsightly... If we complain against these environmental ills, we are sometimes suppressed and called names. The question is: when will this discrimination end? [Nana]

The learners' arguments highlight the post 1994 government's policies that sought to correct and rectify the socio spatial imbalances created by the past apartheid system. The

apartheid environmental racism policy located whites in the environmentally desirable areas relatively free from undesirable effects of industrial waste whilst blacks and people of colour were placed in poorly serviced communal areas and townships, (EDD, 2010). The irony till today as cited by learners is that the poor of which the majority are black are still trapped in poorly serviced communal areas and exposed to unprecedented land degradation through random cutting down of trees. The people in these poor communal spaces are easily stigmatised as the dangerous other because of continuous demonstrations and often violent service delivery strikes. Despite the good government policies on paper, action has been relatively less vigorous in transforming the rural areas into habitable spaces instead the post-1994 government has adopted a negative approach towards informal settlements and backyard shacks, (South African Parliamentary Research Unit, SAPRU, 2009). This is contrary to the government's commitment to step up efforts of providing housing in the rural areas and building public infrastructure through skewing other funds so as to address the rural housing backlog, (EDD, 2010). The post-1994 environmental policies recognise the problems of a distorted distribution of utilities and dis-utilities, but these pro-poor policies have reinforced people's exclusion by subsidising the cost of living through social grants and pensions in the rural areas at the expense of building better houses and sound sewage disposal systems, (Zuma, 2013).

The broad post-1994 government policy aspirations and sectoral programmes need to be translated into level strategies in particular housing, transport and proper land use as these spatial environmental irregularities result in a gap in life chances between the urbanites and rural dwellers, (Makgetla, 2010). This then encourages people to migrate towards economic centres where they are forced into backyard shacks and squatter settlements creating another environmental crisis which is not the scope of this study. In most cases the rural urban migration is genderised and South Africa has seen more men moving to urban centres leaving behind wives and children, this then creates some gender related problems as women are sometimes expected to raise children alone snowballing into prostitution and the spread of HIV/AIDS and an increase in the number of orphans in the rural areas, (SAPRU, 2009). This therefore shows that the spatial inequalities can no longer be explained using the historical factors such as apartheid alone with no recognition that contemporary forces and government policies are reinforcing these spatial gaps.

4.5.4 Garbage Disposal

In the narratives, the issue of irregular refuse collection system resulting in poor and unorthodox garbage disposal methods emerged. The learners documented certain spaces and places within the community which were dumping zones creating not only an eyesore but good breeding places for rodents and mosquitoes. The learners attribute these environmental woes to neglect and poor service delivery by the local government. It is such environmental conditions that have seen South Africa experiencing unprecedented movements of service delivery protests mounting to a rebellion by the poor since 1994, (Alexander, 2010). In some cases these service delivery protests have been against seemingly uncaring, self-serving and corrupt leaders of the municipality, the learners indicated. In some cases these militant protests reach insurrectionary proportions with the people, particularly the youth, momentarily taking control of their areas, (Alexander, 2010). Mophela area has not been spared of such events, the learners stated. It is therefore reasonable to describe the phenomenon as a rebellion of the poor, displaying disappointment with the fruits of democracy as they witness the leaders climbing up the economic ladder whilst the majority still remain poor and stuck in poverty, (Alexander, 2010).

The learners summed up the issues of poor service deliveries ranging from the failure to collect garbage to poor litter disposal methods by the municipality this way:

We burn papers because no one collects them. We used to have a common refuse dumping site where the refuse collectors would pick them regularly in most cases twice a week, but that arrangement collapsed because of non-payment. You see we are living in another world; we are deliberately neglected probably because we do not pay rates. These days what we do is; simply dump the litter in rubbish pits and burn it. We know it's environmentally wicked to burn litter particularly plastics, but we can't help it ... [Mhlengie]

The photograph below was provided by **Mhlengie** showing that at home litter such as papers and bottles are dumped in rubbish pits before burning.



FIGURE 6: RUBBISH PIT AT HOME WHERE WE DUMP LITTER BEFORE BURNING IT. WE DO THIS BECAUSE WE HAVE NO OPTION; NO ONE COLLECTS IT IN TIME.

The following photograph (**Figures 7**) was taken by **Mhlangie** to demonstrate that sometimes garbage is not collected for weeks by the municipality creating an eyesore. Some even dump it in rivers resulting in serious water pollution.



FIGURE 7: GARBAGE LEFT ON TREES

We used to have a van that collected garbage regularly for recycling or landfill zones, but that programme never lasted long probably because the municipality failed to pay the contractor in time. This place is just neglected and nobody seems to be interested in fixing things this side. The reason why the parents end up burning garbage is because we don't know what to do with it. [Mhlengie]

If we look at the garbage collection system by the local government within our community it is a sign that we are looked down upon. Why was the collection programme suspended? Nobody seems to be having an answer to that. We are just a neglected community. This is not fair and I really feel bad about it. [Ngcebo]

People from the nearby township sometimes dump their garbage close to our community and we end up being exposed to a smell that is worse than sewage and these environmental issues are really bad. Our area is like a dumping site. People come all the way from afar and dump their garbage at our local dumping site. We are told that this has been going on ever since time immemorial. The apartheid government was doing the same and the current democratic government is still doing it. This shows that independence was for the selected few people in the townships. We will live with it because we have no solution for it. [Nana]

The narratives by the learners indicate issues of neglect by the municipality. The narrators demonstrate a strong understanding of social injustices within the community but are powerless to take action. The knowledge is there but eco-awareness linked with action is limited. Mohair & Bryant (1998) revealed that children from poor background and impoverished families were not motivated to care about broader issues like resources and conservation. Although learners have the environmental knowledge, low levels of consciousness has led to behaviour that constitutes environmental neglect. This is a lamentable contradiction to engage in progressive revolutionary discourse yet at the same time having practices which negate life.

The photograph below was provided by **Sizane** as proof that people end up dumping garbage in rivers creating another environmental issue (eutrophication).



FIGURE 8: SOMETIMES PEOPLE JUST DUMP GARBAGE IN RIVER WATER CAUSING SERIOUS RIVER POLLUTION

The reckless dumping of litter and waste into the river system causes eutrophication. In this case, it is clear that waste poorly managed, especially excreta and some non-biodegradable stuff such as plastics are a serious threat to life in water and a health hazard. Unattended waste attracts flies, rats and other creatures that in turn spread diseases. It is unquestionable that a racialized socio-spatial landscape still defines South Africa, partly through historical geography and partly through the mobilization by the middle class and upmarket dwellers to keep their places safe. The socio-spatial justice of South Africa's socio-geography requires a major re-mapping. Effective laws and equity are fundamental for asserting justice and this must move beyond cheap politicking to confront the spatial power of capital.

4.5.5 Muddy Houses and Dusty Roads

The learners cited muddy houses and unpaved roads as environmental concerns. Muddy houses were classified as environmentally unhealthy as they expose people to lethal lead pollution. The failure by the government to build proper houses for the community members was associated to poor service delivery by the learners. Unpaved and untarred roads also contribute to air pollution by dust particles. The learners summed it this way:

We have been a neglected community since apartheid times, the government promised to build us subsidized descent houses by 2010, but all ended in vain. Our roads are dusty and we are exposed to dust pollution every day. We inhale dust from passing cars and muddy houses. [Ngidi]

Our roads are dusty and our houses are muddy as a result we are exposed to dusty everywhere every time. This is bad.[Ngcebo]

Sizane provided this photograph to explain how bad the situation is.



FIGURE 9: OUR ROADS ARE DUSTY AND OUR HOUSES MUDDY, WE ARE EXPOSED TO DUST EVERYWHERE

Decades of apartheid rule contributed to conditions of poverty, inequity and exposure to environmental toxicants along class and racial lines in South Africa (Harper et al., 2005). The issues of dusty environment, dusty road and muddy houses narrated by learners are a cause for concern considering it has been twenty years since South Africa has had democracy .The Reconstruction and Development Programme which was adopted by parliament in 1994 meant to address the socio-economic legacy of the apartheid system. Its aim was to alleviate poverty by correcting massive discrepancies in social services across the country, (RDP, 1994). Housing for all was one of the agendas of the programme, but the learners indicated that in spite of countless promises that low cost houses were going to be constructed for villagers nothing has materialised twenty years after independence. Instead

villagers still live in muddy houses and are exposed to dust daily. Their roads are dusty and unpaved.

The conditions cited by the learners are a health hazard for they expose the community to environmental toxicants such as lead (Mathee, et al., 1996). South African soil is rich in lead and this heavy metal is toxic to humans when inhaled in excess. Mathee et al. (1996) reveals that the levels of lead in the bloodstreams of many children from poor communities in South Africa was found to be on the increase and this was associated with inhaling airborne dust from dusty roads, dusty environment and dusty homes.

New studies show that increased levels of lead in the blood has devastating effects on the cognitive function of children and causes neurological complications (Tong, 2000). Although the health and safety legislation is in place but the implementation is restricted to industrial surveillance paying limited attention to the concerns of the poor people and their children. Despite the knowledge that these learners have about the environmental hazards, but certain issues are beyond their shoulders and it would require those who are assigned to govern to stand up and defend the powerless.

Poverty causes pollution and pollution causes poverty (Ajiboye & Ajitoni, 2008). The learners in the Mophela community through the narratives collected seem to understand the environmental burdens but lack critical eco-literacy and the economic muscle that would enable them to transform the historical waves of apartheid that terrorised and marginalised them for decades. This could be explained in terms of what Foucault (1972) describes as the knowledge/power relations. The dominant culture of the haves separates knowledge from power and this brings in conflicts and contradictions within the reproductive processes of the community (Foucault, 1972).

4.6 Community Based Environmental Practices

The environmental issues so far raised by learners point to the lack of community active participation in combating the environmental activities that are destructive to nature. The lack of community active participation is sometimes due to lack of knowledge or the reluctance in challenging the perpetrators because of their political connectedness. Learners

reflect the knowledge and understanding of the environment and associated issues at micro levels. At individual homes there exist cultures of environmental care and in some cases there is a noticeable difference in the way boys and girls value the environment. This difference portrays the socialization of boys and girls in an African community.

A girl had this to say about community environmental action:

I would say that environmental issues are a common knowledge in our home and my academic knowledge about these issues has supplemented on what my mother is always emphasizing, that is keeping the environment clean in order to prevent the spread of communicable diseases. I believe that those who are not taking care of the environment at their homes are just being lazy to do so. Girls are taught to take care of the environment. All girls in our culture are responsible for cleaning the houses and even at school it's the girls who sweep and boys only help in removing desks...boys can't sweep in fact they don't know how to do so. [Nana]

A boy had this to say:

At home I plant trees especially the indigenous ones ...yaa that has always been my business at home. You see at home we are still doing traditional farming. We grow crops for our survival and when environmental education encourages us to plant vegetation so as to prevent soil erosion and increase the number of plants that will remove excess carbon dioxide in order to prevent global warming, it comes as reinforcement to all what we are already doing. It's like we are told what we are already practising. It is encouraging to learn about something that you are already doing. [Ngidi]

In her narrative, **Nana** points out girls are expected to ensure that their environment is kept clean and a boy, **Ngidi**, brings in the issue of taking care for the environment so that it can give something in return. The two narrations bring in the concept of socialisation. There is statistical gender difference with respect to attitude and interest towards the environment between boys and girls as articulated earlier on in the literature. More specifically, girls tend to have more favourable attitudes of the environment as opposed to boys (Huang & Yore, 2004). Zelezny, Chua & Aldrich, (2000), stress that whilst boys are more

likely to utilise nature and take benefits from natural resources, girls have a more emotional attitude of nature and this is evident in the above narrations. Gender roles are determined by socio-economic factors, girls are more likely to care for the environment when there is no commercial value to that but when there is an economic value the role is given to boys. This argument is consolidated by **Nana** in her narrative as she expects girls to be more environmentally caring than boys. On the other hand the boy – **Ngidi**—seems to be concerned about the field protection with an expectation to get benefits from it.

One explanation for the different tendencies of boys and girls towards the environment is that girls have been traditionally responsible for looking after households and children, (Tikka, et al., 2000). This means that girls are directed towards caregiver responsibilities that encourage them to become more nurturing, protective and cooperative compared to boys (Blocker & Ekberg, 1997). This argument is well articulated in the literature reviewed in the earlier chapters of this work. While the motherhood mentality promotes the development of protective attitudes towards the environment, on the other hand boys develop the marketplace mentality focussing on the exploitation of resources (Blocker & Ekberg, 1997).

4.7 Environmental Education

The South African education system is committed to providing environmental education to promote environmental protection but the question remains on how to implement it in such a way that would bring about not only knowledge but positive attitudes and actions that would arrest the looming environmental disaster (Ekekwe, 1997). It is important that the environment and environmental problems should be made known to children particularly learners. Environmental education acts as a medium for creating environmental consciousness and awareness which would then mandate adequate use of environmental resources and sustainable environmental behaviour. In order to achieve the acceptable level of global environmental sustainability they must be empowered with essential knowledge and information through environmental education. The educational institutions as places where the contact of the society is predominant can help to bring remarkable changes to public awareness. Environmental education encourages learners' awareness of their environment's ambient conditions and facilitates active participation in

solving local problems. It shows the learners and the public at large ways of protecting the environment and the consequences of failing to do so.

The inadequate environmental ethics and environmental knowledge coupled with ignorance can only be removed through environmental education and the knowledge gained would give learners as agents, an impetus to participate in decision making, which is a step towards future sustainable development, (Ljunggren, 2011).

4.7.1 Learners' Environmental Knowledge

When questioned about the environment and environmental education most learners were able to give comprehensive definitions of the terms. Learners were able to use relevant scientific terminology demonstrating a full understanding of the environment and environmental education. When requested to explain what they understand by the terms and their sources of information, learners defined environmental education as nature study or a place where living things and non-living things exist together harmoniously. The environmental issues and problems which were cited by learners include land degradation through mining activities and air pollution causing the greenhouse effect. The learners identified the school curriculum as the major source of knowledge about the environment and environmental issues.

Environmental education is a subtopic in both physical sciences and life sciences...it is basically about nature study...it is like you are learning about your environment. We learnt this information from school mainly and sometimes at home we are taught some simple hygiene.[Mhlengie]

I learnt a lot about the environment and some environmental education...what I still remember are the effects of human activities such as mining on the environment...I still remember something about the greenhouse gases which are emitted as we burn fossil fuels and wood...yaa that's what I remember ...yaa environmental education deals with nature related issues. This is a topic that is covered in detail in Life sciences and physical sciences... [Sizane]

The environment itself can be described in many ways...we can say it is a place which consist of living and non-living...plants, animals, water, air and the soil. The environment itself is our source of livelihood. We need the environment and the environment needs us...so our relationship is mutually dependant. Environmental education is therefore an attempt of trying to help man to be at peace with the environment. This topic is mainly taught at school and at home parents don't know anything about environmental issues and we find it difficult even to encourage them not to burn papers nor throw any garbage in rivers.
[Ngcebo]

Environmental education is the study of man and his surroundings. This covers environmental problems and the causes of these problems...and what can be done to minimise these environmental issues. It's like man is at war with nature and environmental education is meant to reconcile the two. Environmental issues are usually mentioned at school during science lessons and at home my mother who is a health worker usually encourages me to take care of the environment. [Nana]

Learners demonstrated a common understanding of the environment and environmental education. The environment was described by learners as a source of livelihood and a system of interdependence of structures such as rivers, forests, animals and the atmosphere. The explanations show an understanding about the environment and environmental education. This demonstrates that learners have been learning about the environment to develop knowledge about the environment (Gough, 1997), a traditional approach to environmental education and Kimaryo (2011) points out that environmental education is more than acquiring knowledge about the environment, rather the translation of that knowledge into positive behaviour towards the environment. The positive environmental behaviour is the total appreciation of the environment and its breadth of diversity and its link with sustainable development (Ekekwe, 1997).

4.7.2 School Based Environmental Education

The learners voiced that the school based environmental education was concentrated in particular subjects such as Life sciences and physical sciences leaving out most of the humanity subjects. They also indicated that the subject at their school lacked practicality and relevance sometimes. The use of abstract terms like pollution, global warming and

greenhouse effects have less salience for non-science learners and hence can be overlooked. The subject also overlooks actual environmental problems and issues by focussing on envisaged global environmental problems.

Environmental education is a sub topic of environmental science and this is a section in physical sciences and life sciences. Most learners who are not science students do not know anything about the subject. I think this is bad considering the fact that over 75% of the learners at my school are not doing sciences, so when will they learn about their environment?...terms like global warming, greenhouse effect and air pollution are difficult to understand for us science learners, it's even worse for non-science learners. [Ngidi]

At school, environmental education is learnt like any content subject. We theorise everything in class. We are taught about the environment whilst we are in class, talk about environmental problems like water pollution, air pollution, land degradation and many other environmental issues while we are in class. The topic is easy to understand and therefore there is no need to go outside the classroom. [Nana]

The picture below was provided by a learner illustrating that they learn environmental education in class like any other content topic.



FIGURE 10: ENVIRONMENTAL EDUCATION LESSON IN SESSION INSIDE THE CLASSROOM

The school based environmental education seeks to develop awareness and understanding of, and respect for, the environment in which learners live. It is supposed to be a platform for creating a commitment to sustainable development at personal and global levels. Reducing the practical nature of the subject leaves the learners with the environmental knowledge, but with reduced critical understanding of the environment, (Kimaryo, 2011). Accumulation of facts with limited critical involvement does not constitute environmental literacy, yet the development of learners' environmental knowledge and awareness of environmental issues are such important goals of environmental science education, (Screiner & Sjoberg, 2005). The narratives demonstrate that children understand the consequences of social and environmental decisions and actions that are currently being made or avoided. The primary goal of environmental education is to motivate and inculcate a positive environmental attitude as a step leading to responsible environmental citizenry, (Ekekwe, 1997), why is it that today's children continue to live in a world where environmental damage, social injustice and appalling ill health are major features of the global landscape?

4.7.3 School Based Environmental Practices

When asked about the environmental issues that were of concern within the school and how these environmental problems were navigated, learners painted a gloomy picture about the school's environmental consciousness. The learners lamented the random burning of papers, the lack of clear environmental programmes, irregular collection of garbage by the municipality, the unwelcoming rugged environment, the eyesore rubbish dumping site and the silence by the school authorities as a clear indication that the school does not have well developed environmental programmes.

...yaa if we do not take care of our environment as suggested by environmental education, this planet would soon be history. Our actions as a school sometimes leave a lot to be desired. Some learners just throw litter everywhere and papers are burnt every day causing a lot of smoke that simmers into the classrooms

chocking us...this is bad. Something needs to be done as a matter of urgency.[Sizane]

If you walk around the school you can see how dirty it is. Litter is all over the place, sometimes you wonder as to whether as learners we feel comfortable living under such filthy conditions. There are papers all over. If you walk around the community you will find papers and food leftovers scattered all over. I think as children who have knowledge and love for the environment, we should spread the good news and demonstrate what we have learnt at school. [Ngcebo]

Besides litter and garbage which my colleague just mentioned, we have an issue of uncontrolled soil erosion around the school and the community. Our school is developing gullies and it's the same thing around the community. We have also the issues of land, air and water pollution. The garbage disposal and solid waste management is also a cause for concern in our school. The burning of litter indiscriminately also is a cause for concern and this contributes to the emission of greenhouse gases and causes global warming. [Nana]

The environmental problems and issues raised by the learners are increasing globally, in spite of the introduction of environmental education in schools, (Toili, 2007). This increase has been attributed to negative environmental activities as cited by the learners and poor national environmental policies of countries rather than individual activities, (Toili, 2007). This therefore does not absolve individuals from contributing to the prevention of environmental pollution and rapid destruction of the environment.

Learners as children will suffer most the consequences of ignoring the environment and therefore should exercise their agency by setting a train of change that is needed in order to divert us adults from our environmental destructive paths, (Kimaryo, 2011). The school should therefore play its role in promoting and birthing a future generation that is environmentally conscious, unfortunately it is not the case as narratives outlined.

...sometimes papers are collected into dust bins and the school grounds man burn these papers behind the classrooms causing a lot of smoke... this contributes to

air pollution. I personally enjoy being at school but the place where papers are indiscriminately burnt is unsightly and unwelcoming. [Ngcebo]

Well its really bad...our school environment especially the paper dumping site is really bad. It is really discouraging...even if we try to collect papers around the school what happens to the collected papers becomes another environmental hazard. The school grounds man burns these papers every morning causing a lot of smoke that sometimes filters into the classrooms...this constitute air pollution. Even if you advise them not to burn papers because it causes a lot of air pollution but...what would you expect them to do? The company that used to collect papers for recycling long ceased to do so...I think the company that was recycling was not paying them enough. [Sizane]

The dumping site is actually an eyesore...it is an area where I don't want to be yet it is part of the school. My major concern is that the school principal and our environmental education teachers are not saying anything about this...bad habit of burning papers.[Ngcebo]

Ngcebo then provided this photograph showing the paper dumping site which he said was unsightly and a place that he doesn't want to be anywhere near.



FIGURE 11: MY SCHOOLYARD

This photograph was taken because I enjoy being at school and playing around the schoolyard, but this is an area that I don't like to be found anywhere near it.

This photograph (**Figure 11**) and the narratives provided by **Ngcebo** and others reveal that children place value on their environment and are concerned about environmental issues. By photographing the site at the school where litter is indiscriminately dumped and burnt shows that learners are concerned about it. The appearance of the site shows that the school community does not have environmentally friendly programmes of disposing litter. The dumping site is an eyesore as the learners narrated and this negates the function of the school as an institution for transmitting positive environmental values.

The narratives of learners further reveal that the school is not taking care of its environment seriously. The photograph below was taken by **Nana** within the premises of the school demonstrating how the school was environmentally hostile. She said this site is unsafe and unwelcoming. By photographing the unsightly metal dumping site, **Nana** shows the importance she places on the school and she demonstrates that the value of the school does not only depend on academic achievements but on an aesthetically pleasing physical environment as well.



FIGURE 12: SCHOOL METAL DUMPING SITE

This is the photograph of the metal dumping area. Unlike papers, remains of metals and glasses cannot be burnt but instead we usually dump them at a place we call nobody's business. There is nothing we can do about this and even the scrap metal collectors rarely come at our place and I think it has been a year since they last visited us. [Nana]

These narratives further show that the silence of the principal and educators on the issues raised is a cause for concern to them. The United Nations on its agenda on ecological sustainability seeks the environmentally educated teachers that would transform attitudes, values and actions of learners and actively participate in positive environmental activities, (UNESCO-UNEP, 2002). The educator who would develop an environmental discourse for social transformation and emancipation of the marginalised instructing them about their situation as a group situated within specific relations of society and subordination, (Darder, et al, 2009). The environmental knowledge gained this way would illuminate the oppressed so that they can in turn develop discourses free from the distortions of their inherited culture of poverty, (Darder, et al, 2009).

The narratives are far from demonstrating the kind of environmental education that involves children, teachers and the community working collectively towards the resolution of environmental questions, issues and problems. Efforts to intensify environmental education in schools have risen over the years but several claims have been raised concerning the inability of students to participate in environmental action. Toili (2007), states that the relationship between environmental education and positive environmental action is complex and requires a deeper understanding of the contributing factors. The learners' school seems to be no exception to that.

When asked about the school environmental policy, the learners testified ignorance about whether the school does have an environmental policy.

Eish... I don't want to lie, maybe it's there but to the best of my knowledge, the school doesn't have. Maybe it's there but nobody has ever told us about it. Our school premises really look bad and for some of us the school is the only place where we can play safely and freely. We need a clear environmental policy that would help us protect our environment. [Mhlengie]

I think the school does not have any environmental policy because nothing has ever been said at the assembly concerning the protection of the environment. Above all the paper dumping site is a home for rodents and snakes and nobody seems to be caring. In view of such, there is no evidence that the school have any environmental policy.[Sizane]

Not to the best of my knowledge. Speaking on my capacity as the member of the RCL² who has attended several meetings with the SMT³ and the SGB⁴ nothing of that nature has ever been cited. I don't think I would be wrong to say that the school does not have an environmental policy. If ever it's there, that means it's available for the teachers and the SMT. I think we need one... and it must be active. [Ngcebo]

The learners' narratives bemoaning the absence of the school environmental policy or the dormancy of it, clearly demonstrates a concern on the part of the learners. Dymont (2003) reveals that students from lower income groups value their school ground and spaces than their counterparts from richer classes. This is confirmed by the emotional tone embedded in the narratives above. Dymont (2003) goes on to elaborate that those children from poor communities rely more on school grounds for play because it is one of the few safe spaces where they can play freely and have quiet time outdoors. The school in this case is depriving the children of that opportunity, as space that could be used for playing is occupied by dangerous garbage.

Forsyth (2003) revealed that the failure by the schools to implement the environmentally friendly programmes exposes the weaknesses of the nation in implementing the environmental policies. This is a cardinal act of negligence in view of several conferences that are held by the UN on sustainable development. The South African National Environmental policy document (RDP, 1994) is a reflection of the government's commitment to preserving and conserving the natural resources. This document aims to rekindle the people's love of the environment and is translated into policies in order to promote an environmental ethic and empower communities to act on environmental issues, (SA, 1994b). The RDP document (1994), states that its implementation would start from schools and it is through the education system that learners are given opportunities to construct meanings in their social contexts. This would give value to socio-political and economic dimensions of environmental issues. The challenge lies with the teachers who are expected to channel the learners' superficial understandings of environmental issues (Lotz-Sisitka, 2006). The question is why are teachers reluctant to effectively implement the environmental education discourses in totality?

Our teachers are always ready to help us during lessons. We rarely carry out practical lessons as well as outdoor activities. We theorize most of the lessons as teacher always tell us that some outdoor activities are time consuming and no examination would test that knowledge. [Ngidi]

The educators in South Africa have argued their failure to implement effectively the environmental education National policies by raising the following concerns: the subject is an add-on, lack of time and resources to support non-examinable subjects, the intensive nature of assessment limits environmental education of high quality and the large class sizes hinder effective assessment (Maila, 2003). The learning and teaching of environmental education in most schools is limited to functional environmental literacy that constitute the basic understanding of environmental issues with limited intentions of bringing about cultural and critical environmental understanding.

Several studies investigating learners' attitudes towards the environment as earlier on indicated, suggest that the learners' knowledge and attitude towards the environment was positive but the environmental destruction has continued unabated at local, regional and global levels (Bulent et al., 2009). The narratives attest to that effect and when they were asked to describe their participation in the school.

At our school the yard or premises do not reflect that we care about our environment or some environmental education is taking place. The ground is too bad. Soil erosion is serious. The open space is not welcoming and it is nobody's business. Teachers' and visitors' cars damage the ground and no one cares. Teachers only teach us about the environment and the environmental issues but have never encouraged us to put that knowledge into action.[Ngcebo]

I don't think the school promotes good environmental behaviour because everywhere around the schoolyard there are gullies and nobody seems to care about this state. It is only on rare occasions that the principal asks learners to pick up papers. So it's like punishment to pick up litter around the school.[Nana]

When asked what effect that had on learner attitude towards the environmental problems

Ngcebo had this say:

Learners hate the picking up of litter because it is associated with punishment not a responsibility. Another environmental problem within the school is that of erosion. The teachers' and visitors' cars destroy grass within the school premises because we don't have proper designated parking bays. The cars raise a lot of dust and we are exposed to dusty environment all day long and nobody seems to care...we have bare patches of ground promoting run-off and gullies are developing and nobody seems to be seeing that.

This photograph was taken by **Ngcebo** to demonstrate that environmental issues were not taken seriously at school.



FIGURE 13: PART OF THE SCHOOLYARD USED AS THE PARKING BAY

When asked to explain why as environmental education learners they were not doing anything that reflects knowledge about environmental issues cited several issues that discouraged effective environmental action: these include the lack of encouragement from the authorities to the porous school fence that allows stray domestic animals to freely move into the premises grazing all the available flowers and the lawn.

There is nothing that we are doing at the moment. We tried last time... a green garden behind the classrooms but because of the porous fence, goats and chickens from the neighbouring homes destroyed all the plantations, so we decided to abandon the programme. We actually abandoned the project because we didn't get any support from the school authorities. [Ngcebo]

The traditional aim for education about the environment has been to develop knowledge and understanding about the environment and creating awareness (Gough, 1997). The narratives reveal that there is lack of educator support in implementing the learnt skills. Kimaryo (2011) points out that environmental education is more than information dissemination as the acquired knowledge does not produce behavioural change in the attitude of people towards the environment in Tanzania. Perhaps the major question one might ask is why teachers are not encouraging learners to participate in environmental activities that promote the conservation of nature? Kimaryo (2011) reveals that environmental education entails more than learning about the environment, instead a wider interpretation of the environmental crisis that needs to be learnt and understood by the learners. By the use of real life situations as basis knowledge through inquiry, the interpretation of the environment is facilitated, (Lee & Williams, 2001).

Educators are aware that hands-on activities enhance deep learning and understanding but are still caught up in traditional talk-and-chalk methods (Mahenge, 2004). This could be the reason as to why learners are taught environmental education in theory but not assisted in practising it. In South Africa, educators attribute this to challenges resulting from large classes, inadequate materials and external pressure from examinations, and the top-down programmes (O'Donogue & Russo, 2004). This way, the learner knowledge and positive attitude towards the environment is severely affected.

Uncontrolled soil erosion, presence of gullies and indiscriminate dumping of litter around the school constitute environmental violence and this triggers the violent-learner behaviour experienced in South African schools (Burton, 2008). A safe school environment is characterised by well-maintained school grounds, controlled and directed loss of topsoil by run-off, proper drainage, sidewalks, clean water, creating safe vehicular routes and parking, designing safety promoting landscaping and green environment (Squelch, 2001). In essence, school physical environment presents a manifestation of the safety of the whole school making the campus welcoming. This implies a healthy and friendly school climate that promotes effective teaching and learning (RNCS, 2003).

4.7.4 A Case for Environmental Education

When questioned about the environmental activities within their school, the learners indicated that there was no collective approach to the issues of addressing the environmental problems. No well organised attempt to reduce environmental problems was sighted, instead each person acted as an individual demonstrating his/her understanding of environmental issues.

I believe environmental education has been a success to some extent for me as an individual, but for others I think a lot still has to be done...me and my friends we respect the environment...we don't just throw papers around, but for others a lot still needs to be done. They just throw around litter as if they were not taught to keep their environment clean. Even in the classrooms you find papers littering the floor and nobody seems to be worried about that. This is very bad. [Sizane]

When requested to explain why other learners were unable to translate what they were taught during environmental education lessons into action, the learner said:

I think for some learners it is difficult to do that, learning is done for the sake of learning. It seems as if they are not concerned about implementing what they learnt into active programmes that would promote the protection of the environment. [Sizane]

When requested to further give reasons as to why other students found it difficult to implement the learnt environmental information into school activities, same learner had this to say:

I think besides being lazy another factor is lack of resources. The school does not have funds to support environmental projects. [Sizane]

The photograph below is that of a school porous fence and was taken by Sizane to demonstrate that the school does not have money to support the environmental projects.



FIGURE 14: POROUS SCHOOL FENCE WHICH DOES NOT PREVENT COMMUNITY ANIMALS FROM WALKING FREELY INTO THE SCHOOLYARD

This photograph was taken to demonstrate that if the school cannot afford to mend the porous school fence then it is impossible that it can have money to support any environmental programmes. [Sizane]

The above narrative by learner identifies two factors that hinder the progression from environmental knowledge to environmental action and those are; reluctance or laziness to implement the learnt skills and lack of resources by the school. Some learners viewed environmental education as an extra-mural subject.

Learners are busy with their school work and participating on environmental activities is like doing extra-mural activities that would never add a mark in your final assessment for progression to the next grade. Instead if you commit yourself much on extra-curricular activities you find yourself repeating the same grade the following year.[Ngcebo]

The teachers especially those who teach us environmental studies usually explain the issues of the environment and their effects. Sometimes teachers facilitate the class discussions on what could be done to alleviate the looming environmental disasters. The discussions we make are usually in theory with no intention of applying what we would have learnt. On the other hand the principal has never

been involved in any environmental activity other than supervising learners picking up papers around the schoolyard. [Mhlengie]

Although the participants demonstrated a sound knowledge about environmental education and environmental issues, Hinnes, et al. (1987), state that there exists a gap between the conceptual knowledge of environmental education and environmental conservation. There is no direct progression from knowledge to attitude behaviour as has been believed. Dusan & Stanka (2009), state that environmental education should not be limited to environmental literacy, knowledge and awareness but should involve the acquisition of environmental values and attitudes that demonstrate an appreciation of the environment and the desire to act collectively and responsibly in order to curb the environmental disasters (eco-literacy). The above narratives seem to be lacking that collective approach in addressing the environmental problems which could be described as the transfer of environmental literacy to eco-literacy.

The learners outline that environmental education is considered an extra-curricular subject that does not increase the chances of passing. This argument is supported by Ljunggren (2011) who reveals that environmental issues in poor communities are a challenge since more urgent needs such as food, text books, science apparatus and adequate livelihood was often prioritised. In this case learners prioritise 'passing' and are reluctant to actively participate in environmental activities outside the classroom.

The environment around us either at school or at home is not as beautiful as I would wish it to be. You see at home my major problem for failing to grow flowers and maintain a good environmental attitude is that of multiple duties. When I get home from school, I must fetch water and go look for stray cattle so time is not enough. At school there are many factors ranging from lack of support from teachers to lack of cooperation by other school mates. [Ngidi]

Maila (2003) in agreement with the learners' arguments states that environmental education in South Africa is viewed by both teachers and learners as an extra-curricular activity or an add-on subject. The intense nature of the assessment procedures make it difficult for educators and learners to promote and engage on environmental education of high quality. The responses show that environmental education is indeed an add-on

subject to the already overburdened learner and teacher, yet it should be a super-subject that inculcates correct values, attitudes, ethics and actions towards the environment, (UNESCO-UNEP¹, 2002). The learners cited earlier the lack of resources as one of the major reasons why learners and teachers were reluctant to engage on activities that promoted environmental conservation. Maila (2003) agrees with this argument and states that the lack of funds in the schools among poor communities and lack of support by the management hinders the effective implementation of environmental education. Principals are engaged in management issues and therefore do not have time to support learning and teaching of non-examinable subjects.

4.8 Resiliency and Agency

While experiencing marginalisation and difficulties in achieving quality education and better services, there exists among these children a resilient mind-set that drives them towards success (Chow, 2001). This agency and resiliency allows them to navigate through the everyday life experiences at school and engaging their social capital.

...things are really difficult and nobody seems to be concerned about us as a community. Last time we went on the streets as a community demonstrating against poor service deliveries...we wanted the councillor out. We spent days on the streets and lost a lot in terms of school work...but at the end nothing changed. I have made up my mind...I will work very hard at school and get better results, that way I will get my parents out of this situation. [Ngcebo]

The solutions for our situation is to learn...learn to pass so that one could get a better job. Once you have a better job you can always help your parents to construct proper water carriage system toilets. It's now clear that we cannot change anything through mass protests...by the end of the day we are always the losers. We need to stop being cry-babies and learn for success.[Sizane]

We have realised that the government doesn't care about us, fortunately the successful former students of the school formed an association called

¹RCI- Representative council of Learners, SMT³ School management team, SGB⁴ school governing body

Masakhane...this group helps facilitates village study home groups. Yaaa ... we know we will pass and work and that will help our families. [Mhlengie]

Masakhane group is helping in monitoring study activities during the evening so that when we go for evening lessons we are not mugged. This group is really an asset within our community. [Nana]

The participants are not academically inclined only but have formed community based study groups called 'Masakhane' (Let's-build-each other) which are supervised by members of the community who are educators by profession. The 'Masakhane' study groups are meant to provide a supportive after school learning environment which keeps learners subsequently encouraged to learn for success rather than spending a lot of time on the environmental ills befalling the community. Suarez (2009) notes that there needs to be adequate academic support structures present out of school that would help children from the marginalised communities adapt and persevere in the face of adversity. The narratives of the learners provided an insight into how the learners and the community view the political and social dynamics of those in authority i.e. counsellors and it is quite evident that the participants were highly motivated to succeed in life through education. Their social capital evidenced in the creation of supportive structures such as Masakhane provided an advantage in their goals of moving towards improving their economic and social circumstances, (Suarez, 2009). The narratives also reveal the networks of support present in form of community based learning structures that are supervised by the community based academics.

4.9 Conclusion

It was important for me that as a researcher, I was not just the exclusionary pressures the children from the poor communities face, but also their resiliency and agency. The narrative excerpts shown are just a summary of the rich data collected from learners, data which other scholars might use to extract valuable themes other than the discussed. There is evidence of perseverance among learners in spite of a handful environmental challenges

that they face every day in and outside the school premises. Findings of the study demonstrate that learners through environmental education have been made aware that if environmental problems are not checked, this would result in an adverse effect on nature and all living things.

The findings revealed through narratives, that learners cannot receive a complete environmental education within the four walls of a classroom but should be exposed to some experiential learning that would involve going out of the classroom; observing, studying and working directly in the fields. Talk-and-chalk alone would never bring forth the expected results. The South African education sector has made a great deal of progress, also the local government (municipals), in reducing imbalances among the communities, but the narratives testify against these efforts. The evidence points to some remnants of lateral segregation where the poor people find themselves exposed to unhealthy environments.

The narratives also suggest that the environmental education is inadequate; this is probably because of large class sizes. In this context environmental education should not be blamed for social and ecological calamity because of its inability to generate effective mass pedagogy in providing solutions for ecological disasters, but contextual issues such as poverty and social neglect must be considered and addressed.

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

5.1 Introduction

In this chapter I present a summary of the key issues that emerged from the study, the implications of the study for the field of education, and the government and, more importantly, for the development of schools as institutions that are conducive to creating an eco-literate citizenry. An eco-literate citizenry is able to articulate the myriad ways in which cultures and societies unfold and develop ideological political systems and social structures that progress towards ecological sustainability and biodiversity. An eco-literate society contains transformative energies, life and liberatory potentials capable of affecting the future (Cummins & Sayers, 1999). Furthermore, I draw attention to areas for further research. In conclusion, my personal reflections of the journey of my study will be shared.

5.2 The Focus of the Study and Research Questions

The study delved into the geographies of environmental education, specifically looking at narratives of high school learners' ecological awareness. This was done by investigating the learners' knowledge and understanding of environmental issues and how these conceptions about the environment are developed. Furthermore how these developed environmental concepts shape their awareness, attitudes, behaviour and agency both in and outside of the school contexts. In order to gain a deeper understanding the investigation further focused on learners' visions for the future of the environment and the individual and personal engagement in the environmental protection. Consequently, the purpose of my study was to contribute to the body of knowledge on experiences of children within an environmental context.

It was important for me to understand the cultural and exclusionary pressures that children who hail from impoverished communities face and how they navigate these pressures. Learners, through narratives were given an opportunity to address the interconnection between the self (learner) and the natural environment.

The research questions that guided my study were:

- What are the high school learners' ecological understandings of environmental issues?
- What are the contextual dynamics that affect high school learners' understandings of environmental issues?
- How do learners navigate environmental issues in the context of a high school?

5.3 Conceptual Framework and Research Methodology

This study was within the framework of Children's Geographies, an area of human geography that studies the places and spaces of children's lives (Muthukrishna, 2013). Van Berk (2005) states that for researchers to understand the geographies of children, one need to delve into their physical space i.e. their homes, communities and schools as well as their emotional frame of mind i.e. the experiences of a child and how this affects their inherent 'being'. The study further explored the potentials and limitations of the pedagogy of discomfort and examines the ways of making meanings of social injustices to children through activities that engage them emotionally (Boler, 1999). The concepts and theories utilised in the study were abetted in eliciting the learners' ecological understandings of environmental issues, the contextual dynamics that affected their conceptions of these issues and how these issues and dynamics were negotiated.

5.4 Findings of the Study

The results of the study highlighted that environmental education is a sub-topic embedded in sciences and is taught in schools with the desire to help learners understand the basic knowledge about environmental issues. This way, learners gain functional environmental literacy as the learning is limited to knowledge about the environment (Gough, 1997). Kimaryo (2011) further points out that environmental education is more than information dissemination as acquired information does not produce behavioural change in attitude. Although learners were able to explain, define and articulate perfectly, the environmental issues and solutions to environmental problems but that knowledge was

not translated into critical eco-literacy where learners and teachers would experience and travel together through the environmental journey. In spite of relevant environmental information, learners indicated a level of reluctance in fully participating in curbing destructive environmental tendencies such as sand poaching because some perpetrators were politically connected. The study also revealed that learners and teachers view environmental education activities as extra-mural or an additional burden. The School Management Team (SMT) placed limited attention and resources to the support of non-examinable subjects and programmes. The learners on the other hand, view the nature of assessment as intensive and does not provide for outdoor activities.

The study also revealed that while the government was committed to establishing legal constraints to prevent pollution, some people in the poor communities are still exposed to environmental hazards such as water, air and land pollution. The local government does not have a sound method of collecting garbage from the poor and marginalised communities.

The study further revealed that the socio-spatial conditions which were linked to race and class before 1994 are still yet to be addressed. National Environmental Management Act (1998) (NEMA) ensures equitable environmental treatment and states that adverse environmental impacts would not be distributed in an unfair manner exposing the vulnerable and disadvantaged. The study testifies contrary to that statement in that burdens and dis-utilities such as sewage ponds, water and land pollution are still located among the poor and the marginalised communities. The study reveals that the environmental hazards impose costs such as lost school and work days due to illnesses and contribute to a shorter lifespan apart from other immeasurable losses thus class injustices are exposed.

The study also revealed that spatial justice is taken for granted if injustices are committed against the poor and socially marginalised and that dealing with environmental issues in poor communities was a challenge since more urgent needs such as food and adequate livelihood were often prioritised. Most learners revealed that at home, they could not implement environmental education programmes because they were busy either ploughing and planting crops or doing some important house chores. Therefore, taking care of the environment and getting involved in greening initiatives was considered a luxury and an unsustainable task.

Finally and most importantly, the study revealed that environmental ills and social neglects have not dampened the desire to learn among students; instead it has provided cultural and social capital for learners. Learners see education as the only window available for them to get out of the realms of poverty. The formation of the after school study groups testify to that effect.

5.5 Researcher Reflections

I adopted a qualitative approach using a narrative inquiry in this study. The qualitative approach was chosen so as to gain in-depth and detailed understandings of meanings, actions, attitudes and intensions, (Cohen et al., 2011). The narrative inquiry as a multifaceted process that encompasses all dimensions of humanity such as cultural, physical and environmental was adopted. This method is based on the principle that people are guided to act by socio-economic relationships, (Riessman, 1993). Narrative inquiry has emancipatory interests, transformative and concerned about social justice issues (Habermas, 1976) and was chosen deliberately so as to expose the unfair distribution of dis-utilities such as sewage ponds contrary to the NEMA 1998 which states that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any persons, particularly those vulnerable and disadvantaged.

Participants in this study were given an opportunity to share thoughts and feelings through narratives guided by the interview questions that were prepared prior to the interviews. Using individual and focus group interviews as well as the photovoice infused with the transect walk, I was able to collect relevant data for my study. As the interviewer, I had greater control over the interview process. I had the authority as the researcher to add questions and probe further and augment with follow-up questions based on the responses provided by the interviewees. During the interview sessions I noted participants' facial expressions, body language and gestures that indicated frustrations of not understanding the questions or not willing to give further details. This, I rectified by either simplifying or re-phrasing the question or asking another question that was more polite than the previous one.

5.6 Implications of This Study

This study indicates that environmental education should be a crucial tool in transforming the attitude of all people rich and poor for sustainable social and environmental relationships. The current curriculum setup slots environmental education into an add-on subject. However, it must be viewed as an action to counteract the looming global environmental disaster. Environmental programmes in schools intending to encourage and promote pro-environmental attitudes should involve activities that aim to restore environmental participation not just 'talk-and-chalk' (Hartig et al., 2001).

Other studies have also shown that learners have sizeable knowledge about the environment and environmental issues. Still, environmental destruction has continued unabated at local, regional and global levels, (Bulent, et al., 2009). This was also reflected in the study and shows that environmental education should not be limited to environmental knowledge and awareness, but should include values and attitudes that are emancipatory and liberatory (Hannes, et al., 1987). Mahenge (2004) encourages a smooth progression from environmental literacy to critical eco-literacy and this could be done by educators who believe that hands-on activities enhances deep-learning and understanding, not the traditional talk-and-chalk as has been the case in the study.

The results of the study pertaining to issues of environmentalism and class reveal that there still exist some inequitable distribution of environmental quality and burdens based on the socio-economic status. The location of sewage ponds and widespread social inequalities such as dusty roads, land degradation through sand poaching and river pollution in this community raises the issues of class injustices. The poor states of roads and dust caused by private cars and taxis passing through the community put the latter at risk of inhaling lead-rich dust. An increase in the blood-lead level has devastating effects on the cognitive function of children and causes neurological complications (Tong, 2000). The study further reveals that the legislative acts in place pay limited attention to the concerns of children and the poor people. The local government must therefore construct proper tarred roads passing through the community in order to reduce air pollution through dust.

As this study was limited to KwaZulu-Natal region, a wider research encompassing other provinces in South Africa might add weight to these revelations and probably trigger a massive legislative review that might give birth to some socio-political actions.

5.7 Limitations of the Study

The major limitation of this study in all probability comes from the 'positionality' of the researcher since he is part of the community that is exposed to environmental issues such as the disproportionate exposure to water and air pollution and also a victim of the environmental hazards. This brought in the crisis of legitimisation (trustworthiness and authenticity) and crisis of representation (authorship that is, text separates researcher from the researched) (Denzin & Lincoln, 1998). The study utilised narrative inquiry, a participatory research method and transect walk infused with photo voice, however upon completion it was found that interviews with the educators, parents and local government officials could have enhanced and added weight to the study.

The study was also limited to KwaZulu-Natal and focussing on a single institution, it could have been beneficial to garner a wider sample encompassing more than one school or extending it to other provinces in order to gain rich and well distributed data. Another limitation which was encountered was the waning away of learner enthusiasm in participating in the interviews as these were beginning to interfere with their examination preparations. Another problem encountered was that some parents were beginning to be suspicious as they felt that the participation of their children might trigger civil wars that once engulfed the area.

5.8 Concluding Thoughts

As a researcher sometimes subjectivity cannot be completely eradicated, instead it could only be minimised and to believe that a disconnection from the subjects of study is possible is far-fetched and a pursuit of an illusion. My positionality as a member of the community that is exposed to environmental burdens such as open sewage oxidation ponds that subject the entire community to a pungent unbearable smell was really challenging. The assumption that as a researcher, I should be objective and distance myself from these sensitive issues and multiple vulnerabilities was contentious and impossible. Hence, my journey through this project forced me to be continuously reflexive so as to build relationships and interact with others on issues of oppression. The journey has been

arduous but ultimately fulfilling. The knowledge gained through this project was insurmountable and left me valuable insights about the social injustices that need urgent redress.

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Appendix 1 – Consent Letter to Principal



School of Education
University of KwaZulu-Natal
Edgewood Campus
P. Bag X03
Ashwood 3605
28/08/ 2014

The Principal
Gabigabi Secondary School

Dear Sir

Re: Request for permission to conduct research at your school

My name is Emmanuel Ndlovu and I am a Masters student at the School of Education, University of KwaZulu-Natal. I plan to undertake a study titled: ***The Geographies of Environmental Education: Narratives of High School learners' ecological awareness***

I hereby request your permission to conduct a study at Gabigabi Secondary School. The participants in the study will be learners from your school. They will be required to participate in individual interviews and focus group interviews that are expected to last between 90-120 minutes, in approximately two sessions.

Please note that

1. The school and participants will not receive material gains for participation in this research project.
2. The learners will be expected to respond to each question in a manner that will reflect their own personal opinion.

3. The school's or the participant's identities will not be divulged under any circumstance.
4. All learner responses will be treated with strict confidentiality.
5. Pseudonyms will be used (real names of the participants and the institution will not be used throughout the research process).
6. Participation is voluntary; therefore, participants will be free to withdraw at any time without negative or undesirable consequences to them.
7. The participants will not, under any circumstances, be forced to disclose what they do not want to reveal.
8. Audio- recording of interviews will only be done if the permission of the participant is obtained.
9. Data will be stored in the University locked cupboard for a maximum period of five years thereafter it will be destroyed.

I thank you

Yours sincerely

Emmanuel Ndlovu

(Supervisor SaajidhaSader, 0763057874 email: SaderS@ukzn.ac.za)

CONSENT FORM

If permission is granted to conduct the research at your school, please fill in and sign the form below.

I,, (Full Name) hereby confirm that I understand the contents of this document and the nature of the research project. I hereby grant permission for the researcher to conduct the research project at Gabigabi Secondary School. I understand that learners are free to withdraw from the project at any time, should they so desire.

Name: _____

Signature: _____ Date: ____/____/____

Mr E Ndlovu
Tel: 073 1112482
031 7725133
Email: endlovu20@yahoo.com

Appendix 2 – Consent Letter to Learner



School of Education
University of KwaZulu-Natal
Edgewood campus
P. Bag X03
Ashwood 3605

28/08/ 2014

Dear Learner

Re: Request For your participation in a research project

I plan to undertake a study titled: ***Geographies of Environmental Education: Narratives of high school learners' ecological awareness***

I kindly ask your permission to participate in the project. The participants in the study will be learners from the various schools. I value what you think about your schooling and how you are experiencing schooling. You will be required to allow me to interview you individually and in focus groups. The interviews will be approximately 90-120 minutes. We will meet in two sessions on two different days that is convenient for you. I will be requesting permission from your parents/caregivers to work with you on the project.

Please note that

1. The school and learners will not receive material gains for participation in this research project.
2. You will be expected to respond to each question in a manner that will reflect your own personal opinion.
3. The school or your identities will not be divulged under any circumstances.
4. All learner responses will be treated with strict confidentiality. Pseudonyms will be used (your real name and the name of the school will not be used throughout the research process).

5. Participation is voluntary; therefore, you will be free to withdraw at any time without negative or undesirable consequences to them.
6. You will not, under any circumstances, be forced to disclose what you do not want to tell us.
7. Audio- recording of interviews will only be done if you give us permission.
8. Data will be stored in the University locked cupboard for a maximum period of five years thereafter it will be destroyed.

I thank you.

Yours sincerely

Mr E. Ndlovu

Tel: 073 1112482

031 7725133

Email: endlou20@yahoo.com

If you have any questions, please feel free to contact my supervisor or myself:

S. Sader

Tel: 0763057874

email: SaderS@ukzn.ac.za

CONSENT FORM:

If you agree to take part in this project, please fill in your full name and sign the form below.

I,, (Full Name) hereby confirm that I understand the contents of this document and the nature of the research project. I hereby agree to take part in the project at my school. I understand that I can withdraw from the project at any time I want to.

Name: _____

Signature: _____ Date: ____/____/____

E. Ndlovu
Tel: 073 1112482
031 7725133
Email: endlovu20@yahoo.com

Appendix 3 – Consent Letter to Parent/Caregiver



School of Education
University of KwaZulu-Natal
Edgewood campus
P. Bag X03
Ashwood 3605

28/08/ 2013

Dear Parent/Caregiver

Re: Request your child's participation in a research project

My name is Emmanuel Ndlovu and I plan to undertake a study titled: ***The geographies of Environmental Education: Narratives of high School Learners' ecological awareness.***

I kindly ask your permission for your child to participate in the project. The participants in the study will be learners from the various schools. I value what your child thinks about his/her schooling and the environment. We will meet in two sessions on two different days that is convenient for the child. I will be requesting permission from your child to work with him in the project.

Please note that

1. The school and learners will not receive material gains for participation in this research project.
2. Your child expected to respond to each question in a manner that will reflect his/her own personal opinion.

3. The school's or your child's identities will not be divulged under any circumstances.
4. All your child's responses will be treated with strict confidentiality.
5. Pseudonyms will be used (your child's real name and the name of the school will not be used throughout the research process).
6. Participation is voluntary; therefore, your child will be free to withdraw at any time without negative or undesirable consequences to him/her.
7. Your child will not, under any circumstances, be forced to disclose what he/she do not want to tell us.
8. Audio- recording of interviews will only be done if you and your child give us permission.
9. Data will be stored in the University locked cupboard for a maximum period of five years thereafter it will be destroyed.

I thank you

Yours sincerely

E. Ndlovu

Tel: 073 1112482

031 7725133

Email endllovu20@yahoo.com

If you have any questions, please feel free to contact my supervisor

SaajidhaSader: 0763057874

Email: SaderS@ukzn.ac.za

CONSENT FORM

If you agree to take part in this project, please fill in your full name and sign the form below.

I,, (Full Name), the parent /caregiver
of..... (Name of child) hereby confirm that I understand the
contents of this document and the nature of the research project. I hereby agree to my child
taking part in the project. I understand that he/she can withdraw from the project at any
time I want to.

Name: _____

Signature: _____ Date: ____/____/____

Mr E. Ndlovu

Tel: 073 1112482

031 7725133

Email: endllovu20@yahoo.com

Appendix 4 – Ethical Clearance Letter from UKZN



26 April 2013

Professor A Muthukrishna 845
School of Education
Edgewood Campus

Protocol reference number: HSS/0250/013

Project title: The geographies of children's schooling in six Southern African Development Community (SADC) countries: Narratives of children, parents/caregivers and teachers

Dear Professor Muthukrishna

Expedited approval

I wish to inform you that your application has been granted Full Approval through an expedited review process.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. Please note: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steven Collings (Chair)

/px

cc Dr P Morojele
cc Academic leader researcher Dr MN Davids
cc School administrator Ms B Bhengu

Humanities & Social Sc Research Ethics Committee
Professor S Collings (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 3557/3350/4357 Facsimile: +27 (0)31 260 4409 Email: ximbap@ukzn.ac.za ;
snymanm@ukzn.ac.za / mohunp@ukzn.ac.za
Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

INSPIRING GREATNESS



Appendix 5 – Ethical Clearance Letter from the Department of Education



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Sibusiso Alwar

Tel: 033 341 8610

Ref.:2/4/8

Prof. N Muthukrishna & Dr P Morojele
P O Box X03
ASHWOOD
3605

Dear Prof. Muthukrishna and Dr Morojele

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **THE GEOGRAPHIES OF CHILDREN'S SCHOOLING IN KWAZULU-NATAL: NARRATIVES OF CHILDREN, PARENTS/CAREGIVERS AND TEACHERS**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 01 May 2013 to 31 March 2014.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Mr. Alwar at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Director-Resources Planning, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education:

Umlazi District
Sisonke District
Zululand District

Othukela District
Pinetown District
Illembe District

Nkosinathi S.P. Sishi, PhD
Head of Department: Education
Date: 19 November 2013

KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL: Private Bag X 9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa

PHYSICAL: 247 Burger Street, Anton Lembede House, Pietermaritzburg, 3201. Tel. 033 392 1004 Fax: 033 392 1203

EMAIL ADDRESS: kehologile.connie@kzndoe.gov.za; CALL CENTRE: 0860 596 363;

...dedicated to service and performance
beyond the call of duty

WEBSITE: www.kzneducation.gov.za

Appendix 6 -Interview Schedule

Individual biographical information

What is your name?

How old are you?

What grade are you in?

Where do you live?

What kind of homestead do you live in? (Traditionally inherited/bought/subsidy/renting)

Who is the breadwinner at home? What is his/her profession?

Besides your parents/guardian, how many adults live in the same house with you?

What are their sources of income?

Why do they live with you in the same homestead?

Knowledge about environmental issues and sources

As a life/natural sciences student have you covered the topic on nature's study/environmental education?

Is environmental education successful? If yes how successful? If no, why is it so?

Is the environment an "issue" If yes, how and should it be compulsory for all students? If no, what hinders that?

Do you think you are getting the desired change in value, attitude and behaviour from learning about the environment? If yes, how? If no, what could be responsible for that?

Do you think others have adequate environmental knowledge and awareness? If yes, to what extent? If no, what can be done?

Do you take care of the environment around you? If so why? If not, why?

Where have you learned about taking care of the environment? Why is this important?

Does your teacher or parents encourage you to care for the environment? If so how?

Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information? Why/why not?

Do you read books or magazines with environmental messages? If so what have you learnt from them about the environment? How have you used what you learnt from those magazines/books?

Do you think we are part of nature? If so/not, how?

Do you think that the environment around you is beautiful? Why? If you could change things what would you change to make it more beautiful?

Do you think the natural environment is a source of joy, wonder and awe? If so why? If not, why?

School environmental conditions

How would you describe the appearance of our school grounds? Do you like it? Why?

How do you feel about the state of the school grounds?

Are there any unsightly environmental hazards within the school grounds? If it is so describe those hazards.

How does the school control the washing away of top soil?

How does the school dispose of litter? Do you think it is a good way to get rid of litter? If you were the principal how would you get rid of litter?

What do you not like about the way in which litter is disposed of?

How often does the school conduct seminars on environmental issues? What does that tell you about the environmental policy of the school?

Do you feel something must be done with regards to the school's environmental policy? If so why and if not why?

Community environmental policy

Micro

What kind of toilets do you have at home?

Do you like these kinds of toilets? Why?

What can be done to improve the toilet system at home?

How do you feel about using these kinds of toilets?

You have the knowledge about the environment and what happens if we do not look after it? Are you able to do this at home? If yes, what support do you get from the members of the family? If no, why are you not able to use this knowledge at home?

Macro

What kinds of toilets are largely used by most homes around your community?

Why do people prefer those kinds of toilets?

What are the disadvantages of the kinds of toilets that are dominant within your community?

Do you think that the toilet system within the community is alright? If you could change things what would you change to improve this situation?

How does the community dispose of its garbage?

What are the disadvantages of the community's garbage disposal method? If you could change things what things would you change to improve this situation?

State other hazards that emanate from the community's garbage disposal method.

Man and his environment

What do you see in the environment that you live in as being harmful to members of the community?

Which are the ones you think are the most harmful? Why?

Policies and Rules

Who or what do you think has caused the damage to the environment? How and Why?

What do you think could be done to reverse the destruction of the environment?

Are there any plants growing in rivers running through the community? If so why are so many plants growing in water?

If there are signs of plants growing in water bodies(eutrophication), what are the possible causes of this catastrophe? Who are the possible culprits of this catastrophe?

What are the possible dangers of exposing the community to water with a lot of mineral nutrients from industrial, farming & sewage discharges?

What can be done to reduce the levels of plant growth (eutrophication) in the rivers within the community?

Appendix 7 - Interview Guide

Focus group interview

Man and his environment

The aim of the focus group interview is to establish learners:

- awareness and sensitivity to the environment,
- understanding of the environment and related environmental issues/problems,
- feelings of concern about their environment and their motivation to actively participate in improving and protecting the environment,
- skills for identifying and addressing environmental issues/problems, and
- current level of active involvement in working to address/resolve environmental issues/problems

What do you understand by the environment?

What is the environment made up of?

What and where have you learnt about the environment?

What environmental issues/problems are you aware of? How have you become aware of these issues/problems?

What do you know about how these environmental issues/problems have been caused? (Who or what has created these environmental problems?) Where and how did you learn about this?

How do you feel about these environmental issues/problems?

What do you think can and should be done to address these environmental issues/problems? What can we do to take care of the environment? Where have you learnt about this?

Who do you think is responsible for this, i.e. improving and protecting the environment?

Why is it important for us to take care of the environment?

Are you aware of any environmental programmes in your school and community? Tell me more?

What are you doing to improve and protect our environment?

Probes

What are your feelings about waste generation, waste hazards and waste management?

What are your feelings about soil erosion, soil pollution, water pollution, air pollution and environmental degradation?

What are your views about environmental issues such as global warming and climate change?

Are there any signs of water pollution in rivers that run within the community you live in?

Why was the sewage treatment ponds located within your communal area? How do you feel about this?

Do you think the community was consulted during the construction of sewage treatment ponds? Should they have been consulted? What do you think should and can be done to address this issue?

What are the environmental hazards emanating from the sewage treatment works located within the community?

How does the local community benefit from the sewage treatment works?

What are the disadvantages of having sewage treatment ponds located within the community?

In which way are humans and animals dependent on the environment and its resources such as air, water, land and sunlight?

Is man part-in-the environment or he is part of the environment?

Are human activities such as settlements, farming and construction of dams detrimental to the natural environment?

Learning and teaching

Does science education at school provide learning experiences that can raise environmental awareness?

Which school rule/s seems/s to be drawn from the national environmental policy?

What environmental actions are taken locally (school) which are reflective of the national agenda on conservation of natural resources

Is ecological science insensitive or inhospitable to social education?

Community and the globe

What are your feelings about waste generation, waste hazards and waste management?

What are your feelings about soil erosion, soil pollution, water pollution, air pollution and environmental degradation?

What are your views about environmental issues such as global warming and climate change?

Are there any signs of water pollution in rivers that run within the community you live in?

What are the environmental hazards emanating from the sewage treatment works located within the community?

How does the local community benefit from the sewage treatment works?

What are the disadvantages of having sewage treatment ponds located within the community?

Why where the sewage treatment ponds located within your communal area?

Do you think the sewage treatment works are also located in the affluent communities?

Do you think the community was consulted during the construction of sewage treatment ponds?

Conclusion

What can be done at school to raise environmental awareness?

How can the school activities on raising environmental awareness snow-ball into a community project?

Comment on the phrase, 'think globally and act locally' with reference to environmental issues.

Appendix 8 -Transect Walk and Photo Voice Schedule

The interviewer and the interviewees will select the starting point from the school and carry out a two-hour transect walk across the communal area. Participants will take photographs of the scenarios they consider to be environmental hazards during the course of the walk.

At the end of the transect walk participants will each take 5-7 favourite photographs and dialogue around the images being guided by the photovoice technique called:

SHOWED

What do we **See** here?

What is really **Happening** here?

How does this relate to **Our** lives?

Why does this situation **Exist**?

What can we **Do** about it?

The letters of this acronym each correspond to a question and the series of questions prompt the participants to critically analyse the context of their photographs. The participants then codify their issues, themes and theories emerging from the photographs.

Appendix 9- Turnitin Report

[Document Viewer](#)

Turnitin Originality Report

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Thesis By Emmanuel Ndlovu

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Appendix 10 - Letter from the Editor

To Whom It May Concern

This is to confirm that I, Bernard Mathey, have edited this thesis, *The Geographies of Environmental Education: Narratives of High School Learners' Ecological Awareness* by Emmanuel Ndlovu.

In doing so I have only corrected the grammatical, spelling and other linguistics discrepancies and have not contributed to the factual content of the work.

I have been doing said editing for the past 15 years both in a media capacity and in an education capacity, especially the UKNP.

Bernard Mathey

084 827 6903

Appendix 11 -Interview Transcripts

Interviews

Introduction

Interviewer: The aim of this group discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real names will not be used instead pseudonyms will be used to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment.

Ngcebo: there are many ways of describing the environment; we can say it is a place which consists of living and non-living things, that is plants, animals, rocks, water and many others.

Nana: I have the same definition and just wish to point out that most of the information is found in text books, television programs and magazines.

Interviewer: Nanan can you please tell us a bit about these programs or magazines.

Nana: I read a newspaper story talking about land pollution at a certain township in Pietermaritzburg (Mbali). The article was saying that people are indiscriminately throwing away papers and garbage making the vicinity unsightly. This article was published with an intension of getting the attention of the government and the municipality so that they can act on the looming environmental disaster.

Interviewer: Thank you Nana, did you make a follow up to that story so as to find out whether certain action was done?

Nana: No, I never followed up that story because I was still young and little or no knowledge about the environmental issues.

Interviewer: Thank you; are there any environmental issues or problems that we can think of around our community?

Sizane: Some of the environmental issues that the media and texts talk much about are: global warming, emission of greenhouse gases, drought and hailstorms.

Ngcebo: Just to add to what Sizane has just said, we have air pollution, water pollution and land degradation. These are practically common within our community and we experience them daily. Yah...not forgetting noise pollution.

Mhlengie: Another serious environmental issue common within our community is what I can call soil poaching. Our area consist of Umgeni sand which is a component of building material, so scoopers excavate the land picking up this sand leaving the soil bare and prone to erosion.

Interviewer: How do you feel about this issue raised by Mhlengie?

Ngcebo: This issue raised by Mhlengie is really a sad story. Land is an important asset, but it is being destroyed while we watch simply because the trucks that carry this sand belong to some big guys with bucks. Land is important for us and our future generations. So for land pollution mentioned earlier on, it is a serious problem, you can hardly move more than five metres without seeing some discarded plastic papers. Some people even throw dippers and nappies and stray dogs start scattering these filthy materials around.

Interviewer: Why do you think people just throw away litter everywhere?

Nana: I think as a rural community that lives outside the township, we do not have regular plans for collecting garbage. In the township the waste management vans collect litter and garbage from designated areas on regular bases, but with us here, we don't have such an organised plan. So people do as they wish, some just throw papers away others burn them which another environmental hazard.

Sizane: Some people bury plastic papers and this again reduces the usefulness of the soil because plastics are non-biodegradable, but I think people do all this because they don't know the effects of disposing litter this way especially plastics.

Interviewer: Quite powerful, why do you think people behave or act this way within the community yet there are learners who are doing environmental education and they are living within the community?

Mbuso: Sometimes people act this way because we have unreliable leaders. Sometime last year we were asked to collect bottles and pile them in large bags and we did that, now it's almost a year those piles are still there. This is discouraging and bad.

Nana: Some people act this way because they lack knowledge about land pollution.

Ngcebo: I personally think they are two reasons why people act this way; firstly they lack knowledge as Nana indicated, but the second reason is that even those who have the necessary knowledge find it difficult to change to the new eco-friendly ways of disposing litter and garbage. You know some of them were born 15-18 years ago and ever since then till today litter was burnt or buried, now to expect a change overnight it's almost impossible. It's like you can't teach an old dog new tricks.

Ngidi: I believe the truth is that people are just careless not that they lack knowledge or something else. They just don't give a damn about the environment or environmental issues.

Interviewer: Thank you Ngidi, why do you think people are not concerned about environmental issues and problems?

Ngidi: People are concerned about living today not tomorrow, so these environmental problems take time to manifest so most people want to do things where they will be able to see immediate results. People want to take part in activities that would benefit them not somebody else. For instance most people are thinking about pressing issues such as food and shelter and as a result for them the land and the environment are not really issues considering what they need now.

Interviewer: What do they need urgently compared to important environmental issues?

Mbuso: On an empty stomach you can't think of disposing a piece of paper properly instead of getting busy thinking about where the next meal is coming from.

Ngcebo: I don't agree with Ngidi and Mbuso because some people eat food wrapped in plastic and after eating the contents they still go on to throw away the piece of paper, the issue of an empty stomach is out. I think the issue in this case is carelessness and the resistant to change.

Ngidi: The litter and garbage I am talking about is more than just free cool papers its litter coming from homes.

Interviewer: I think you are agreeing on the importance of these environmental issues but the problem is that you are still trying to find a common ground. Are there any other environmental issues that we have around our community besides land pollution?

Mhlengie: Another environmental hazard common within our community is the burning of litter especially plastics, this causes air pollution. During the evening most people burn papers and the thick smoke makes breathing difficult especially for asthmatic people.

Ngcebo: Just to add to what Mhlengie has just said, the effects of burning litter goes beyond our community. This leads to global problems such as global warming, drought and acid rain.

Interviewer: So far we have identified two environmental problems within our community, which is land and air pollution.

Ngidi: Another issue is the reckless cutting down of trees by people building their houses. This causes deforestation and if the trees are less then soil erosion becomes a problem. Trees also clean the environment by removing too much carbon dioxide from the atmosphere. Too much Carbon dioxide causes global warming

Mbuso: Just to add to what Ngidi said; the tree less environment becomes dusty when there is wind and children inhale this dust which is also a health hazard as we know that some soils consist of many deadly which are toxic to people if inhaled.

Interviewer: Why do people recklessly cut down trees?

Ngcebo: Some people as Ngidi indicated use these logs as building material because they cannot afford to buy treated timber from hardware stores. Some even kill plants because they need herbs for treating ailments. Many trees are uprooted for some ritual purposes. Some people use firewood when cooking so big trees are cut down and seasoned before they are used as firewood.

Interviewer: Why is it that some people have electricity at home yet others do not have electricity in spite of the fact that they are all from the same community?

Nana: The level of poverty is not the same, some can afford to connect electricity yet others cannot afford.

Interviewer: What can be done then Nana?

Nana: The government must understand that some people have no money and therefore it must connect electricity for free and perhaps charge them for using it. At the township electricity is connected for free and people only pay for using it. Why are we supposed to pay for the connection yet the community is known that it is made up of poor people? If people have no electricity it gives birth to a problem of deforestation.

Mhlengie: Another environmental issue that is common within our community is that of land degradation through soil poaching. Some people who own vast pieces of land sell the building sand to the building contractors. Scoopers excavate land filling trucks with Umgeni building sand. This process leaves behind three issues; the first one is that the disused excavated land collects water during the rainy season posing danger to children who see this as recreational facilities for swimming. These mini ponds also become breeding places for mosquitoes and that is a health hazard. The second issue is that the soil is left bare after excavation making it prone to erosion agencies such as wind and water run-off. The third issue comes when wind causes a lot of dust and Mbuso indicated that we inhale a lot of dust which consist of toxic metals such as lead.

Interviewer: Why do people sell Umgeni sand despite all these arguments that you are putting across?

Ngcebo: This is all that people have; you generate income from what you have. Some people look at the piece of the inherited land as what they have and use it oblivious of its depletion.

Interviewer: How do you feel about that?

Mhlengie: it's bad but you can't do anything, it's a question of what we value, life or the land.

Interviewer: What must be done then?

Sizane: I think the government must make it illegal to poach umgeni sand from our community because this creates more problems for the poor community. We get sick because of this and we cannot afford skyrocketing medical expenses.

Interviewer: Why can't you as a community advise the sand sellers that they are doing more harm than good?

Sizane: These people are connected and well respected in the community; actually they are a source of employment. Most of the school leavers are work there filling trucks with sand.

Interviewer: Hmmm, any other environmental issues around the community?

Ngcebo: The sewage ponds located within the community are a cause for concern. The smell from these ponds is just unbearable and no one can justify why these sewage treatment ponds were located within our community yet we do not use water carriage toilets.

Interviewer: Tell me more about these sewage ponds.

Ngcebo: The sewage from the nearby Mpumalanga Township is dumped within our community where the treatment is done. We have homes around these sewage ponds and we are subjected to this stench daily yet as a community we use pit latrines to relieve ourselves.

Interviewer: Do you know why these sewage ponds were located near your homes?

Sizane: We don't know no one knows the truth. Some still believe that these ponds are not sewage treatment ponds but water treatment ponds. The problem is that we are looked down upon, may be because we are poor and even the councillor is not doing anything.

Interviewer: What do you think needs to be done?

Nana: Remove these sewage ponds because honestly speaking; the smell is just too bad. Imagine being subjected to a poo smell daily, every hour and every minute the rest of your life. This smell makes other people sick.

Ngcebo: The sewage ponds are also to eutrophication. The Umlaas River which is a source of water for us and animals is heavily polluted. Green algae are growing and they are no more fish in the water. This is bad and something must be done.

Interviewer: What must be done?

Ngidi: Remove these sewage ponds and locate them somewhere. The government must address this issue as a matter of urgency. Can you imagine that these sewage ponds were built after 1994, if it was before that we could be talking about the black or white case, but now it's black on black?

Ngcebo: I think the community needs to be educated about the dangers of these ponds, because some people seem not to be concerned. My uncle left us he is now living in the township because my aunt couldn't stand the smell, now we are living alone and my uncle was the sole bread winner. This is bad.

Sizane: I think people have the knowledge about the environmental issues, but what they lack is the transformation.

Interviewer: Explain.

Sizane: The community is made up of children who have been exposed to environmental education, but the problem is transformation, that is taking action in line with what you have learnt.

Interviewer: Thank you very much for that insight let us now narrow the discussion. Do you think as a school you are environmentally conscious and environmentally friendly behaviour is promoted?

Nana: I don't think the school promotes good environmental behaviour because everywhere around the school there are papers and nobody seems to care about this state. It's only on rare occasions that the principal asks the late comers to pick up papers. So it's like punishment to pick up litter around the school.

Interviewer: What effects does that have on your attitude as a learner towards the environmental problems?

Ngcebo: Learners hate the picking up of litter around the school because it is associated with punishment not a responsibility. Another environmental problem within the school is that is that of erosion. Teachers and visitors' cars destroy grass within the school premises because we do not proper designated parking places. The cars raise a lot of dust and we are exposed to dusty environment all day long. We have bare patches of ground promoting run off and gulleys are developing and nobody seems to be seeing that.

Interviewer: As environmental education learners what are you doing that reflects your knowledge about environmental issues?

Ngcebo: There is nothing that we are doing at the moment. We tried last time a green garden behind the classrooms but because of the porous fence, goats and chickens from the neighbouring homes destroyed all the plantations, so we decided to abandon the program.

Nana: We actually abandoned the project because we didn't get any support from the school authorities.

Interviewer: What kind of support were you expecting and why do you think that support was going to turn around the environmental look of the school?

Nana: It's simple and straight forward, mend the fence and keep away all animals. By now are greening effort could be somewhere.

Interviewer: Besides that project which failed do you have any other environmentally related programs?

Sizane: The only program that we have is that of making latecomers pick litter around the school and that is the sole program that is making the school slightly different from a paper dumping site.

Interviewer: Why do you think learners and educators are turning a blind eye to such environmental problems?

Ngcebo: I think they are two reasons for that; the first one is lack of knowledge or the failure to understand the impact of these environmental problems on our lives within the

school. The second reason is that people come to school to learn so that they can live better lives in the future, they don't live in order to learn.

Interviewer: Quite interesting can you please explain further.

Ngcebo: Yep, learners come to school to learn so that so that they use that learnt information to live after school. Taking care of the school environment does not earn them marks. We indicated earlier on that we once planted some trees around the school with the hope of greening the school yard and those trees besides being eaten by goats died because of lack of care. Learners and teachers are not concerned about these environmental issues, but more concerned about a good matric certificate. That's our goal number one.

Interviewer: Why do people think that way?

Nana: Everybody is just saying this is not my home. Even if you look at the class rooms and toilets, they are dirty and poorly managed because we are not prepared to pretend that the school is our home.

Interviewer: Isn't it that the school is part of your life and home?

Sizane: The school is different from home and everything is totally different. Nobody comes to school just to learn about growing trees and flowers, which can be done at home not here.

Ngcebo: But I think the school should be considered as a second home if not the first home. We learn skills that we will apply when we start our own homes. What I know is that a person who does not respect his/her environment anywhere is bound not to respect the environment even at his/her dwelling place.

Interviewer: Why do learners have this negative attitude towards the school environment?

Ngidi: It is painful to be at school, you are constantly under pressure. The topic on Environmental education constitute about 5%, so it is futile spending a lot of time working on the grounds at the expense of other topics that carry a lot of marks and therefore it is better to learn 'about' the environment. If you don't do that you fail and making the school beautiful will not score you marks.

Interviewer: What would you do if you were the principal of the school?

Mbuso: Put rules that encourage the greening initiatives, like mending the school fence, organise green school competitions, arrange trips to land fill zones and recycling factories et cetera.

Nana: Even organise assembly presentations and have a clear and that way others would be encouraged.

Ngcebo: I think the other thing is to have a clear environmental policy that would be known by everybody including the parents so that these green initiatives could be done even at home.

Narrative 1 (key I= interviewer & S= interviewee)

Biographical information

I: Briefly tell me your name, your age, where you live and the grade you are in.

S: My name is Mhlengie, I am 17 years old. I'm in grade 12 and I live in Mophela rural area

I: What kind of homestead do you live in? (Traditionally inherited/bought/subsidy/renting)

S: The kind of home that I am in living in was traditionally inherited, it's like our great-grand parents were allocated the space by the chief at that time and so we have been living there as the descendants of the Mkhize clan.

I: Whom do you live with?

S: I live with my grandmother and my aunt who happens to be the sister of my own mother. My own mother sadly passed away when I was too young, but my father is staying quite some distance and I have just heard about him but have never seen him. It's like nobody actually knows where he stays.

I: Who is the breadwinner at home? What is his/her profession?

S: At the present moment no one is working at home. My uncle who used to be the breadwinner is no longer staying at home, he left with his wife. So far I would consider my grandmother to be the sole breadwinner because she gets the pension grant from the government. My aunt also gets the grant for my cousins and we also receive the grant with my sister as the orphans. At the present moment the social work people are threatening to suspend the orphan grant we are receiving because my father is still alive, the problem is that we don't know him and we don't know where he lives.

I: It's quite sad, but thanks for being part of this interview. I wish to reiterate that this interview seeks to understand and establish your awareness and sensitivity to the environment. The aim of this discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real name will not be used instead pseudonyms will be used

to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment and environmental education.

Knowledge about environmental issues

Sources

S: I wish to point out that the topic was covered in all the sciences that we are doing at school, environmental education is about nature study. It's like you are learning about the environment.

I: Is environmental education successful? If yes how successful? If no, why is it so?

S: I would say that environmental education is successful to me because it has made me aware of the issues that can cause harm to us as people and our animals and plants.

I: Is the environment an "issue" If yes, how and should it be compulsory for all students? If no, what hinders that?

S: For me the environment is an issue, I like walking around seeing beautiful places and I feel environmental education or science must be integrated in every subject just like HIV/AIDS so that all learners irrespective of whether they are science or not at least know something about the environment.

I: Why do you see it as important for all learners to know about the environmental issues?

S: It's like you can't change things alone. If out of 1000 learners at our school only 10% of the learners are exposed to environmental education and the rest know nothing about environmental issues then you can't win the war against the looming environmental disaster.

I: Do you think you are getting the desired change in value, attitude and behaviour from learning about the environment? If yes, how? If not, what could be responsible for that?

S: As an individual I have changed, but wouldn't say that others are showing any signs of positive change towards the environment as evidenced by the continuous paper littering and indiscriminate burning of plastics.

I have never heard of any of my friends suggesting that we should act in a way to prevent environmental problems. We only discuss environmental topics during revision preparing for the examinations or tests.

I: What do you think needs to be done in order to encourage other learners to actively participate in preventing environmental hazards?

S: Learners have adequate information especially those who do sciences, but the problem is that they seem to be reluctant to perform activities that promote the conservation and the preservation of environmental resources. All what must be done is to encourage them to act.

I: How can they be encouraged to act in ways that would promote the conservation and conservation of environmental issues?

S: The teachers and the principal must address learners at Assembly and explain some of the environmental problems and how those problems can be minimised through change in behaviour.

I: How often do your teachers or principal encourage you to care for the environment?

S: The teachers especially those who teach us environmental studies usually explain the issues of the environment and their effects. Sometimes teachers facilitate the class discussions on what could be done to alleviate the looming environmental disasters. The discussions we make are usually in theory with no intention of applying what we would have learnt. On the other hand the principal has never been involved in any environmental activity other than supervising learners picking up papers around the school yard.

I: Do you think your school has an environmental policy or programs that promote environmental understanding?

S: Eish... I don't want to lie, maybe it's there but to the best of my knowledge, it doesn't have. May be its there but nobody has ever told us about it. The school yard is not bad in terms of litter because the principal uses the latecomers daily to pick up litter every day, but the problem is that all litter that is picked up is burnt behind the classrooms. Sometimes the smoke filters into classrooms and this is bad. Burning of paper indiscriminately is an

environmental hazard. I would summarise by saying our school yard is bad; soil erosion is not controlled, gullies have developed, no one is talking about planting of trees and everyone seems to be turning a blind eye.

I: Why do you burn papers? Is it alright to burn papers according the environmental knowledge that you have?

S: The school burns them because there is no alternative to that. In most days we pick up a pile of papers and where can we put them? As a result burning is the only option that we have. We know it is not environmentally advisable to burn papers especially plastics because that releases a lot of carbon dioxide which can cause global warming. I believe that global warming is a world problem as a result burning papers at our school cannot have a significant effect to the whole world.

I: What if all neighbouring schools also burn papers, don't you think that could cause environmental problems?

S: Yep, that would cause environmental effects, but the case is different because our neighbouring schools are from the township where litter is collected by the municipality and sent either to the landfills zones or recyclers.

I: Why doesn't the school make also make such arrangements?

S: We used to do that but the arrangement didn't last. Sometimes they would take up to four weeks without coming to collect and dogs and goats would end up tearing those bags scavenging for food and scatter the papers around. That was more chaotic than the present arrangement.

I: What do you think was the reason for not collecting garbage in time, whereas at the Township litter is collected in time?

S: I don't know may be they were not paid, this side nobody cares, I believe we are looked down upon by the responsible authorities. They know that we will not complain.

I: What do you think must be done in order to control this environmental problem?

S: I think the school must pay the guys who collect waste and not wait for the council to do so. May be we can have our own land fill zone and teachers must also encourage learners to not litter around.

I: At home how do you deal with such cases?

S: It is the same story; we burn papers because no one collects them. We used to have a common refuse dumping site where the refuse collectors would pick them regularly in most cases twice a week, but that arrangement collapsed because of non-payment. You see we are living in another world; we are deliberately neglected probably because we do not pay rates.

I: I see, do you think others are aware of all this? If they are aware then why don't you take action like what people usually do if they demand service delivery?

S: People in our community will never come together for a common good thing; they would come together only if they can feel the effects. You see, burning paper does not produce immediate effects, but if it was something like an increase in taxi fares, yes people would stand up & complain because that affects them immediately.

I: Do you think people are aware of these environmental hazards and real understand their effects on mankind?

S: I think most of the young people are aware because they have been exposed to environmental education at school.

I: Does your grandmother, aunt or uncle encourage you to take care of your environment?

S: No, I think they basically know nothing about environmental issues. Grandmother is normally concerned about hygiene but I think that was inculcated to her since she was young.

I: What have you done about that lack of basic knowledge about the environmental issues?

S: Nothing. You see a child cannot tell an adult to change habit. I remember at one time I tried to explain that pouring used water anyhow would create ponds that become breeding places for mosquitoes that cause malaria. I got myself into trouble explaining how I knew

that it was the female mosquito that caused malaria. So I have decided to keep my mouth shut.

I: I see, your point, what kind of toilets do you have at home and do you like those toilets?

S: We have the pit latrines and I don't like these kinds of toilets because of the stench and the flies, but we have no option it is all that we have and we are used to it.

I: What can be done to improve the toilet system at home?

S: The government must build us the water carriage system toilets as it has done in township communities. We are also South Africans; we should not be treated differently, in townships the municipality built toilets for everyone.

I: If the water carriage system toilets are used where would the sewage drained go to?

S: We have the sewage ponds that are located within our communal area and these ponds treat sewage from the township five kilometres away from our community but we are exposed to this filthy smell every day.

I: How do you feel about these sewage ponds being located within your community and yet it is treating the sewage coming from another community?

S: This is real bad. These sewage ponds are a real health hazard and many people are getting sick, but we are used to it and we have nowhere to go. My uncle relocated because the wife couldn't stand the stench, so they now leave at the township and he was the sole breadwinner, so we were left alone with no money.

I: I am sorry about that, is there any other environmental issue of concern within the community?

S: Land degradation. We have people who own vast pieces of land around the community. Initially these open spaces were used for farming, but now owners are selling the sand to building constructing companies. This is sand poaching as trucks and trucks collect excavated sand and building soil from our community paying sick money to the land owners. The excavated land is left with holes and holes and when it rains water are collected creating dams and children like playing there. This is a health hazard. Sometimes children

drown and the standing water pools are breeding places for mosquitoes. We are really in trouble, but powerless because people are selling the building sand from the land they own. When it is not raining, the dust from these open sand mines causes air pollution. Dust is everywhere. The exposed soil is easily washed away by all erosion agencies and this is another environmental issue.

I: How do you feel about all this and what could be done?

S: This is bad and painful but we are powerless. The people who sell building sand must stop and police must stop them. The government must make a law that makes it illegal to sell sand because that creates environmental problems. Also the people who own land must also grow crops in order to reduce soil erosion.

I: Besides land degradation through sand poaching are there any other environmental issues that are prevalent within the community and what can be done about them?

S: Water pollution by the sewage treatment works which I mentioned earlier on. The digested sewage from the plant is discharged into Umlaas River which is the water source for us and our animals. The river water is not colourless but green and this is a sign of water pollution. Our animals drink heavily polluted water from the river and this is not good at all. The solution is simple; removing the sewage ponds from our community would solve many environmental problems.

I: The sewage ponds seem to be a thorn in the flesh of the community, how do you as a community benefit from these ponds?

S: We get sick and subjected to a pungent smell, I am not being sarcastic that is how we benefit. We have two or three people from the community who are employed, but that can't be rolled out as an advantage.

I: Thank you very much and now I want us to concentrate on 'you' and your environment. Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S: I normally watch television programs that talk about global warming and the destruction of the earth by aliens. It is not possible to use the information from the television sets

because most of it talks about the things happening overseas. They tell us about ice melting and we do not have ice here at Mophela, as a result the television programs are sort of out.

I: Do you read books or magazines with environmental messages? If so what have you learnt from them about the environment? How have you used what you learnt from those magazines/books?

S: I read mainly text books as this is the major source of information in our community. We do not have libraries this side and we have no money to travel to the township where we have the community library. When you read the textbook, it's solid; the information there is for understanding so that you can pass not that you can use it. Of course I have benefited in a way, I now know the activities that are environmentally evil.

I: Do you think we are part of nature?

S: We are part of nature and at the same time destructive in a way. We sometimes act irresponsibly, people just throw away litter anyhow and you wonder how they think. Even those who are exposed to environmental education they behave irresponsibly, I think we all need to change our behaviour somehow.

I: Do you think that the environment around you is beautiful? Why? If you could change things what would you change to make it more beautiful?

S: It is beautiful but a lot needs to be done in order to make it more beautiful. At school we need to fix parking space and make flower rockeries.

I: Do you think the natural environment is a source of joy, wonder and awe? If so why? If not,

S: Yep the environment is awesome and I love nature and if I had power I would force even all the learners to grow flowers and make the environment more beautiful.

Narrative 2 (Key I= interviewer & S₂=Interviewee 2)

Individual

Biographical information

I: Briefly tell me your name, your age, where you live and the grade you are in.

S₂: My name is Sizane, I am eighteen years old, I live at Mophela communal area and I am in Grade 12.

I: What kind of homestead do you live in? (Traditionally inherited/bought/subsidy/renting)

S₂: Where I live is a place which my parents bought from the local chief soon after the tribal conflicts during the late nineties.

I: Who do you stay with and who is the breadwinner?

S₂: I live with both parents and my father is the breadwinner and he is the truck driver.

I: Besides your parents/guardian, how many adults live in the same house with you?

S₂: So far the only adults that I live with are my parents.

Knowledge about environmental issues

Sources

I: The aim of this discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real name will not be used instead pseudonyms will be used to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment and environmental education.

S₂: I learnt a lot about the environment and some environmental issues what I still remember is the effects of human activities such as mining on the environment. I still remember something about the greenhouse gases which are emitted during the burning of wood and fossil fuels, *yaaa* that's what I remember

I: Do you still remember any of those environmental issues?

S₂: The burning of paper and wood releases gases such as carbon dioxide which the earth to become hot and if the earth becomes too hot that causes environmental problems such as drought, storms, tsunamis and *ya* that's what I remember.

I: Is environmental education successful? If yes how successful? If no, why is it so?

S₂: I believe environmental education has been a success to some extent for me, but for others I think a lot still has to be done. *Yaa* me and my friends we respect the environment, it's like we don't just throw papers around, but for others a lot still needs to be done. They just throw around litter and even in classrooms you find litter everywhere.

I: Why do you think environmental education has not been a success for some other learners?

S₂: I think for some learners, learning is done for the sake of learning. It seems they are not concerned about implementing what they learnt into active programs that would promote the protection of our environment.

I: Why do you think learners find it difficult to implement the learnt environmental information into school activities?

S₂: I think lack of resources is the factor which prevents learners and parents from actively participating in efforts related to the reduction of greenhouse gases. For instance at some homes there is no electricity and people use wood in making fire for cooking purposes. Papers are all over and since we don't have other means we burn them to reduce rubbish around and as I said earlier on lack of resources are causing all this ...*yaa*.

I: Do you think as an environmental education student this course has made you act environmentally nice?

S₂: So far I don't throw litter anywhere and even at home I don't recklessly burn papers and I believe this is because of the knowledge that I gained.

I: At home do you usually get any form of support from parents in this regard?

S₂: My parents support cleanliness around the premises, but the problem usually occurs when they fail to understand that the burning of papers is environmentally hazardous. I cannot tell them because they won't listen to me. You see the issue of global warming is not easy to explain to parents who are not schooled, for instance at one time I tried to advise that when watering trees and the lawn, soapy water should not be used, but nobody listened me because I am a child. When the lawn started dying then people at home began to realise that I was speaking the truth. This time no body waters the lawn with soapy water

or water with disinfectants because they saw the results. With global warming results are not easy to see.

I: Do you think other learners and people in general have got adequate knowledge about environmental issues?

S₂: I think people including learners do not have adequate knowledge and this is evidenced by the throwing away of papers and burning of litter. Maybe some apply the knowledge learnt at school, but I think that number is too small as most people do not care much about the environment and environmental issues.

I: At school are you encouraged to look after the environment?

S₂: Teachers and the class managers encourage us to look after the environment by not throwing around papers, *yaa*, I think that is all that they do.

I: How would you describe the appearance of your school yard?

S₂: The school premises are bad and nothing is being done. The only environmental hazard that is being controlled is litter. Soil erosion is common and gullies are developing everywhere. There was once a green garden programme which was started three-four years back, but because of the porous fence goats and cows from the surrounding community ate all the vegetables and we abandoned the project. You see this is discouraging. Around the school there are no designed water ways and collected litter is burnt behind the classrooms by the caretaker. All this, I will just say is problematic to the environment. The soil around the school is bare and there are no plants and all this promotes runoff and a lot of dust when there is wind. This dust is a health hazard to children as we do not know the chemicals and pathogenic microorganisms that are present in the soil. Remember this dusty school ground is our home for nine hours a day and really I wish something could be done. The programme of collecting litter failed to last because the school couldn't pay the recycling company. As a result there is a dumping site behind the classrooms where papers are indiscriminately burnt causing a lot of air pollution.

I: Does the school have any environmental policy?

S₂: I think the school does not have any environmental policy because nothing has ever been said at the assembly concerning the protection of the environment. Above all the paper dumping site is a home for rodents and snakes and nobody seems to be caring. In view of such, there is no evidence that the school have any environmental policy.

I: How do you feel about that?

S₂: I feel bad about it. The school is our second home so it is like we are neglecting our home.

I: If you were the principal what environmental programmes were you going to introduce?

S₂: I would encourage learners to clean up the environment, construct proper water ways to reduce erosion, employ efficient waste collectors and construct proper car parks. The other project that I would undertake is the greening of the yard.

Community environmental policy

Micro

I: Community environmental policy

Micro

I: What kind of toilets do you have at home and do you like them?

S₂: At home we use pit latrines and don't like these toilets because of the smell.

I: What can be done to improve the toilet system at home?

S₂: The government should build us water flush system toilets since we have sewage ponds located within the community. Remember these sewage ponds collect sewage from the township kilometres away from our community.

I: Why do you think these sewage ponds were located within your community despite the point that the community does not have the water carriage system toilets?

S₂: I don't know, I think it is because they know that we won't complain. At first people were told that the municipal was building the water treatment plant, now we know that it's

a sewage plant and nobody is prepared to speak. The sewage ponds produce a stench which is unbearable and is causing a lot of sickness, you see it's already a burden for us because we don't have a clinic around and if someone gets sick one must have money to travel to the health centre which is located some ten kilometres away in the township.

I: I really understand your position, how do you dispose solid garbage and papers at home?

S₂: The municipality gives us refuse plastic bags where we which ideally they are supposed to collect every Wednesday, but that does not happen. Sometimes garbage takes a month to be collected and the scavenging dogs and cats scatter the litter around. These refuse collection points are unsightly and a health hazard as they become homes for snakes, bacteria and mosquitoes. Sometimes children play around these places and they are exposed to all these dangers.

I: Thank you very much and now I want us to concentrate on 'you' and your environment Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S₂: *Yaaa*, I do watch some television programs on environmental concerns, but very few are relevant for my age. I like the programme on nature and animals. *Yaaa*, basically that's it, most of the time I do my school work.

I: Do you read books or magazines with environmental messages? If so what have you learnt from them about the environment? How have you used what you learnt from those magazines/books?

S₂: I normally read magazines related to environmental education, especially the ones that we collect from the Hammarsdale resource centre. I learnt a lot from these magazines especially the fact that we don't have to burn plastics under whatever conditions. I would have loved to apply some of the suggested ways of contributing positively to the environment like keeping your home green, but the hindering factor is that of parental support and lack of time due to the pressure of work at school.

I: Do you think we are part of nature?

S₂: Yes I believe human beings are part of nature; in fact we are more dependent on nature than the nature on us. Nature only needs our support and care whereas we need nature for our existence, so I would say that we are part of nature as long as we protect it.

I: Do you think the natural environment is a source of joy, wonder and awe? If so why? If not, why?

S₂: *Yaaa*, for me the environment is my source of joy, I enjoy being in an environment that is nice and beautiful. I don't enjoy being around a place which is rough, unwelcoming and dry with no life.

Narrative 3 (Key S₃ = Interviewee & I = Interviewer)

Individual

Biographical information

I: Briefly tell me your name, your age, where you live and the grade you are in.

S₃: My name is Ngcebo and I am 17 years old. I live in Mophela communal area with my aunt and uncle. Presently I am in grade 12.

I: What kind of homestead do you live in? (Traditionally inherited/bought/subsidy/renting)

S₃: My home was traditionally inherited and my family has always been living in this area ever since time in memorial.

I: Who is the breadwinner at home? What is his/her profession?

S₃: My guardians are breadwinners, my uncle is a security officer and my aunt is a general worker at a nearby sugar factory.

I: Besides your parents/guardian, how many adults live in the same house with you?

What are their sources of income?

S₃: We live with two other adult uncles who are not working. We live with them because this is a family home and that is where they belong so they cannot go anywhere.

Knowledge about environmental issues

Sources

I: The aim of this discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real name will not be used instead pseudonyms will be used to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment and environmental education.

S₃: Environmental education deals with everything around us and environmental issues are those actions or concerns that threaten existence of peace in the environment.

I: In your own opinion, do you think environmental education successful? If yes how successful? If no, why is it so?

S₃: I would say it's successful particularly for me as a science student. I now know what damages the environment and what benefits it. Those things that benefit the environment include things like planting of trees and grass to prevent soil erosion. Planting benefits us as

humans and also help in releasing nutrients to the soil. Not growing trees is bad for the environment.

I: Is the environment an “issue” to you? If the environment is issue, explain how? Should environmental education be compulsory for all students?

S₃: The environment is my source of life. I live in it and it is like everything for us as and animals. If it were according to my will environmental education would be done by all learners regardless of whether they are science students or not. What is currently happening is that they are less science students than in other departments so that means only a few people are exposed to environmental studies and this leaves us with a lot of learners who know nothing about the environmental issues.

I: As a learner who has been exposed to environmental studies, do you look after the environment?

S₃: Sometimes I do sometimes I don't because it takes a lot of time to be serious about environmental business. Because of school work, I sometimes fail to get enough time to carry out activities that promote environmental protection.

I: Do you think you are getting the desired change in value, attitude and behaviour from learning about the environment? If yes, how? If no, what could be responsible for that?

S₃: Learning about the environment has actually enriched me in terms of knowledge. I might not be fully participating in activities that promote our environment, but the knowledge that I have has increased the level of my consciousness about the environment. I would say I am not there yet but I have left where I used to be.

I: Sounds interesting, do you think others have adequate environmental knowledge and awareness? If yes, to what extent? If no, what can be done?

S₃: Some learners have correct attitudes and values about the environment whilst others do not have those correct values. Those with correct values sometimes do it unconsciously they just protect the environment without the knowledge of environmental problems. It's like they were born with it. For instance in our culture it is a taboo to cut down a huge tree without consulting the elders, of course the reasons given are religious but in a way the

vegetation is protected and I believe this is working in favour of the environment. Girls for instance always want to keep the places clean and this is something that they were exposed to since birth. Of course some learners don't care and don't even know the effects of environmental problems. It is like the information learnt at school is meant to make them pass and nothing beyond that. I think again other students might be having the correct attitude about the environment, but that can't apply at home because our homes have different rules and regulations, for instance you can't change the rules you were born into. If at home they burn litter you can't say because I now know that burning is a global danger therefore, 'guys don't burn litter'....no it doesn't work that way.

I: Thank you very much for that detailed response, how would you evaluate your 'own' actions towards the environment. Are they good or bad?

S₃: As for me, I would say my actions are good for the environment. I don't throw around litter or paper and I always want to keep the environment clean, but sometimes I fail to be good because of certain circumstances.

I: What hinders you as an individual from translating your knowledge of environmental education into action?

S₃: You see the problem with environmental education is that the effects are not spot-on and you cannot directly say that droughts and storms are caused by 'you'. The effects for not caring for the environment are just too slow one has to believe not understand. This is the reason why sometimes we are reluctant in actively participating in some environmental actions and I also believe that is the reason why most people don't participate actively in reducing environmental problems.

I: I see. So can we conclude this subsection by saying that environmental education is successful or not.

S₃: It's successful in telling us 'about' the environment, but not in putting what we have learnt into action. It's like we know what's right and what's wrong, but doing it is a different story. Actually time is not available; we have a mountain of work to do.

I: At home do you live with adults who encourage you to protect the environment?

S₃: At home no one talks about the environmental issues; I believe this is because of illiteracy. Yes they can count and write, but in terms of environmental issues nothing has ever been said in that regard. I have tried on several cases to talk about environmental issues and my effort has always been thwarted because I am a child and they are adults. You as a child cannot teach an adult, but an adult can teach a child. Any kind of environmental protection at home is by co incidence not deliberate. I sometimes keep the environment clean because of fear of immediate problems like diarrhoeal diseases.

School environmental conditions

I: How would describe the appearance of the school yard? Do you like it? Explain your answers.

S₃: At our school the yard or premises do not reflect that we care about our environment or some environmental education is taking place. The ground is too bad. Soil erosion is serious. The open space is not welcoming and it is nobody's business. Teachers' and visitors' cars damage the ground and no one cares. Papers are also found everywhere around the school premises and sometimes the principal directs the late comers to pick up them up but victory is not insight. It's like you have to be wrong first in order to participate in cleaning the school yard. Teachers only teach us about the environment and the environmental issues, but have never encouraged us to put that knowledge into action. Everyday papers are burnt by the school grounds man behind the classrooms and the smoke goes up causes air pollution and contributing to global warming and that is nobody's business.

I: Do you think the school does have an environmental policy?

S₃: To the best of my knowledge no. Speaking on my capacity as the member of the RCL who has attended several meetings with the SMT and the SGB nothing of that nature has ever been sited. I don't think I would be wrong to say that the school does not have an environmental policy. If ever it's there, that means it's available for the teachers and the SMT.

I: Do you feel that something must be done, if so what is it?

S₃: I think something has to be done as a matter of urgency. The school must draft an all stakeholders environmental policy, if ever it's there it must be made known to the learners. Another thing that the school should do is to stop treating environmental issues as minor issues and major the minor issues. The school must hold seminars encouraging learners to look after their environment. Learners should enjoy taking care of their environment, punishing offenders by picking up papers does not stimulate interest for caring for the environment.

Community environmental policy

Micro

I: What kind of toilets do you have at home and do you like them?

S₃: Small pit latrines and like nothing about those kinds of toilets. They are smelly, filthy and sometimes flies, no....no I don't like anything about those kinds of toilets.

I: What could be done to improve the toilet system at home?

S₃: We need the government to build us descent toilets with proper sewage system. It doesn't help us as the community for the government to build recreational centres like sports grounds living out important things like toilets. People around our community are always having diarrhoea especially during the rainy because of improper toilet system. For how long are we going to ignored and looked down upon by those who are expected to protect us. We have many environmental problems in our community and nobody seems to be concerned.

I: Please tell me more

S₃: Land pollution, land degradation and air pollution.

I: Tell me something about each of these issues

S₃: Our soil in this community consist of Umgeni sand which is useful in the construction industry, so in every open space the land is damaged by scoopers collecting sand for construction. Our place is now having pits everywhere. When these scoopers are collecting this sand a lot of dust causes rises from these sites causing a lot of air pollution and some

people get sick because of this. Because of this business of sand poaching our land has been commercialised and no one is growing crops any longer. The result of this is that the soil is left bare and prone to erosion. The roads leading to our community are not tarred and cars & taxis cause a lot of dust and this adds to an already polluted environment and we actually breathe dusty air and nobody seems to care.

Umlaas River is our main source of water and a lot of green plants are growing in the river. You see, this is not good for life in water we will soon lose all the fish because of pollution from the nearby farms and the sewage dams. These sewage dams are not only destroying our river but also causing a lot of air pollution. I don't know who placed them right in the middle of the community. The smell is killing, every morning you work up to this smell and every evening it's the same story. We have serious environmental problems in our community.

I: What can be done in order to reduce all these environmental hazards?

S₃: Educate the community about these hazards and the government must intervene in order to stop sand poaching its real killing us through air pollution and the deadly sewage ponds must be removed because after all we don't benefit from them as a community.

I: Thank you very much and now I want us to concentrate on 'you' and your environment Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S₃: I wouldn't say I have watched any television programs because at home we do not have that stuff. You see my uncle does not have enough money to buy most of these luxurious gadgets, money is enough for food and my aunt usually buys us cloths.

I: Do you read books or magazines with environmental messages? If so what have you learnt from them about the environment? How have you used what you learnt from those magazines/books?

S₃: Yes I read books mainly because I want to pass so that I could work and assist my uncle. I have read mostly about the components of the environment and how man has contributed to the destruction of the environment. As I said earlier on it is not easy even if you have the knowledge about environmental education to apply it at home because parents are not prepared to be taught by children. I appreciate the knowledge that I have and would soon apply it when I am free to do so.

I: Do you think we are part of nature?

S₃: We are part of nature and mutually dependant; we need nature more as human beings.

I: Do you think that the environment around you is beautiful? Why? If you could change things what would you change to make it more beautiful?

S₃: The environment around me either at school or at home is not as beautiful as I would wish it to be. You see at home my major problem for failing to grow flowers is that of multiple duties. When I get home from school, I must fetch water and go look for stray cattle so time is not enough. At school there are many factors ranging from lack of support from teachers to lack of cooperation by other school mates.

I: Do you think the natural environment is a source of joy, wonder and awe? If so why? If not, why?

S₃: I grew up herding cattle and therefore being in a natural world is a source of joy for me. The calmness of nature helps me think about whom I am and that keeps on reminding me about being an orphan, but still enjoying the protection from my uncle and aunt.

Narrative 4 (key I= interviewer & S₄= interviewee)

Biographical information

I: Briefly tell me your name, your age, where you live, the kind of home you live in and the grade you are in.

S₄: My name is Nana, I live at Mophela communal area, and I am eighteen years old currently doing grade 12 at Gabi Gabi secondary school. Our home is a traditional homestead which was inherited by my grandfather from his fathers.

I: Who do you live with and who is the breadwinner at home?

S₄: I live with my mother, my grandmother, my uncle and his wife. The only adults who are working at home are my mother and uncle. My mother is a health officer whilst my uncle works at a certain clothing factory.

Knowledge about environmental issues

Sources

I: The aim of this discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real name will not be used instead pseudonyms will be used to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment and environmental education.

S₄: I would define environmental education as the study of man and his surroundings; it also covers environmental problems and the causes of those problems

I: Is environmental education successful? If yes how successful? If no, why is it so?

S₄: I would say that environmental education is successful in the sense that it has supplemented on what my mother is always emphasizing, that is keeping the environment clean in order to prevent the spread of communicable diseases. I believe that those who are not taking care of the environment they are just lazy to do so. Girls are taught to take care of the environment.

I: Are boys also taught to take care of their environment at home?

S₄: It is traditionally not the business of boys to look after the environment; boys are taught to use the resources in the environment in order to ensure that life goes on for all of us. For example girls are taught to sweep, clean and create flower beds in order to beautify the premises and boys hunt and fish in order to ensure that there is food at home. Even here at school girls are responsible for sweeping whilst boys just move desks because they are heavy.

I: Do you think you are getting the desired change in value, attitude and behaviour from learning about the environment? If yes, how? If no, what could be responsible for that?

S₄: Not really, most people don't have a right kind of attitude towards the environment; you sometimes see people throwing litter everywhere without having a proper conscious to keep the environment clean. The behaviour of some of us makes one wonder as to whether they have proper knowledge about environmental issues or not. It even surprises further to find an environmental education student and worse so a girl not maintaining cleanliness in the environment around the school.

I: Do you think generally other learners have adequate environmental knowledge and awareness? If yes, to what extent? If no, what can be done?

S₄: I believe people have adequate information about environmental problems such as land pollution, air pollution and water pollution. We all know the effects of these environmental problems such as diseases like tuberculosis, cholera and global hazards such as global warming. But the problem is that people don't want to participate in activities that promote environmental conservation.

I: What makes you think that way?

S₄: learners still throw away pieces of paper and this is a sign that they are not concerned about preventing land pollution. If you look around the school there is litter all over, it's not that learners are not seeing anything wrong with that, but it's because they are just reluctant to take action. It's like people are saying that we are here at school for academic reasons not as workers. This is bad.

I: I see, does your environmental education teacher or principal encourage you to take care of the environment?

S₄: The teacher mentions it in class, but has never talked about the practical application or encouraged us to take care of the school yard as a way of consolidating what we have learnt. I think she doesn't care or she has a lot of work to do other than monitoring the practical application of environmental education which is not examinable. As for the principal I think she cares much about the appearance of the school because that affects her

directly as the head of the school. Whatever she does, she does it without the knowledge of encouraging learners to apply the environmental education, but I think for selfish reasons. The principal forces offenders to pick up litter around the school so as to make the school yard appear tidy, this way the school premises are kept clean, but litter is only picked if they are late comers or learners who have violated one of the school rules. I think this method does not encourage learners to take care of the environment instead it makes them hate the cleaning process.

I: Why do you think learners are reluctant to action the environmental education programs?

S₄: I think for learners, they are busy thinking about passing the examinations and teachers are equally concerned about that because that's what counts at the end of the day. The application of environmental education must be examinable if people are to take it seriously. You see everybody is busy thinking about school work and greening initiatives are just a luxury because you don't get marks for that.

I: Does your school have any environmental policy?

S₄: Don't know whether such a thing exists. I think the school does not have any environmental policies, because as it is there are no environmental plans in place.

I: Do you take care of the environment especially at home?

S₄: At school I don't usually do so because even if you I do so there is no form of support that you can get either from the learners, teachers or the principal because of the reasons I stated earlier on.

At home I have flower beds, nice and beautiful rockeries just to make our home look nice. You see at home everybody is just supportive and my mother is always encouraging, but can't do it here at school because other learners would think that I am trying to be funny.

I: What other environmental hazards are common at school?

S₄: Soil erosion is common. Our school yard consists of bare patches of land and if there is wind or rain, the soil is easily washed away. Wind sometimes causes a lot of dust and that causes air pollution. The school does not have a proper drainage system and this is bad and

this is bad for the school environment. I actually feel as if nobody cares about our school environment. Erosion is not an overnight issue. I mean it is an indication that we have been turning a blind eye to our environment over a long period of time.

I: What can be done?

S₄: I think the principal and the teachers should take an initiative of encouraging the learners to grow vegetation around the school so as to prevent the washing away of soil by erosion agencies such as wind and runoff. We need effective prefects who would monitor the cleanliness of the school yard. Actually the picking up of papers should be like an honour not a punishment. At home we keep our environment clean not because of fear of punishment or being reprimanded, but we do as honour.

Community environmental policy

Micro

I: What kind of toilets do you have at home and do you like them?

S₄: Small pit latrines and like nothing about those kinds of toilets. They are smelly and very unhygienic. Sometimes flies spread some stomach complications. Everything is just bad about these kinds of toilets. It is like the toilets are breeding places for bacteria, but there is nothing that we can do because that's all that we have. People are always sick because of these toilets

I: What could be done to improve the toilet system at home?

S₄: I think the government must build us proper drainage toilets that will deposit the sewage in the sewage ponds where it can be treated so that it does not cause any diseases. I don't think this process would be expensive because we already have sewage ponds within our community that are treating the sewage from other places.

I: How do you feel about these sewage treatment ponds located within your community yet you don't benefit from them?

S₄: This is unfair and whoever did it had no good plans about the people at Mophela. What could be done? We endure the pungent smell throughout our lives, yet there is no consolation for that. This is unfair.

I: What can be done?

S₄: I think there are only two options; remove the sewage ponds completely from our community or build the water carriage system toilets for the community.

I: I see; how do you dispose of litter at home and the community at large?

S₄: Ideally there is a municipality hired van that is expected to collect garbage every week, but that has never been the case. We normally put garbage at collection points as a community, but in most cases the van doesn't pick up the garbage for days until it is scattered by dogs. This issue is really worrying because our area is now littered with papers ranging from simple bread bags into filthy disposable baby nappies and many other waste things. This is really bad; I wonder why the local councillor does not take action. This is a health hazard.

I: What can be done?

S₄: The councillor and the department of land affairs must come up with the solution in this regard. The community and the school must be assisted in ensuring that the waste is managed properly. Garbage must be collected in time and people must sort out their litter into groups of recyclable and non-recyclable. The community through the local chief and the councillor must initiate environmental programs that would roll out environmental awareness so that these environmental burdens could be reduced.

I: Thank you very much and now I want us to concentrate on 'you' and your environment. Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S₄: Yes I have watched a good number of environmental programs on television and most of them they are quite educational. I normally watch the program called me and my garden, it's really nice. I learnt that you can talk to your flowers and they can talk back to you. On

that program they encourage people especially florists to be sensitive to the language the flower speaks. If the flower is sick you can see it because it speaks. That's a wonderful program.

I: Do you read books or magazines with environmental messages? If so what have you learnt from them about the environment? How have you used what you learnt from those magazines/books?

S₄: Yes I read magazines and newspapers especially if there is an article about the environment. Last time I read about the land pollution around Mbali Township in Pietermaritzburg and the paper made me understand that as long as you drop the papers anyhow around someone would do so and in the end it becomes an environmental issue. If you decide not to throw a piece of anyhow and somebody else does so then the result is a clean environment.

I: Do you think we are part of nature?

S₄: Yes I believe that we are part of nature and nature likes us especially if we engage in activities that makes it beautiful. For instance if flowers are attacked by pests and then you destroy those pests, the flowers bloom as a sign of saying thank you.

I: Do you think that the environment around you is beautiful? Why? If you could change things what would you change to make it more beautiful?

S₄: I think the environment is beautiful but we can make it ugly or more beautiful. If it's beautiful it becomes my source of joy.

Narrative 5 (Key; I = Interviewer, S₅= Interviewee)

Individual

Biographical information

I: Welcome to this brief interview about your knowledge concerning environmental issues. Please feel free to respond in whatever way for this is not an examination. You are free to refuse giving responses to questions you feel you are not comfortable with. Once again be

reminded that this interview will not be used in any way other than what was explained to you earlier on.

S₅: Thank you

I: What is your name and how old are?

S₅: My name is Sibusisiwe and I'm 17 years.

I: Where do you live and who is your guardian

S₅: I live at Mophela area with my mum.

I: What is your mum doing for a living?

S₅: She is a domestic worker.

I: What kind of homestead do you live in, is it traditionally inherited/bought/subsidy/renting

S₅: Traditional

I: How many adults do you live with other than your mum & why do they live with you?

S₅: four, this is the only place that the Nqayi family call home, so they cannot go anywhere.

I: Who are they and what are their sources of income?

S₅: Two aunts and two grandparents. They are not working

I: Why are they not working?

S₅: My grandparents are too old to work and they are receiving government's old age grants and the two aunts are still struggling to secure sound employment, you see it is not easy to get employment these days.

Knowledge about environmental issues

Sources

I: The aim of this discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real name will not be used instead pseudonyms will be used to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment and environmental education.

S₅: Hmmm, yes we have covered that and I think it's all about man and nature...something like that.

I: I see; do you think environmental education is successful? If yes how successful? If no, why is it so?

S₅: I think it has been successful to a certain extent, but generally it is still a long way to go. People are still behaving the traditional way. We were taught about soil erosion, but we do nothing about soil erosion. We were taught about land pollution, but we still litter around papers. We were taught about air pollution, but we still burn papers. I personally believe that environmental education is not real a success.

I: Why do you think people are reluctant to apply what they were taught?

S₅: I really don't know, may be teachers are not encouraging us to apply that knowledge. It is like all the work ends in the classroom. Nobody takes anything home or just outside the classroom. I think another reason is that we are not assessed outside the classroom, but inside the classroom. Even our tests are not practically based I think that is the reason why teachers are not concerned about the practical nature of environmental education.

I: Is the environment an "issue" If yes, how and should it be compulsory for all students? If no, what hinders that?

S₅: Yes, the environment is really an issue and I believe that environmental education should be compulsory and be made practical not just theory, because as it is it is just a theoretical component of life sciences and physical sciences.

I: Do you think you are getting the desired change in value, attitude and behaviour from learning about the environment? If yes, how? If no, what could be responsible for that?

S₅: Yes I am getting some value and I would say that now I have the knowledge and I believe even my friends have the knowledge, but the problem is on implementing this knowledge or rolling this into action.

I: Why are you not doing it at home?

S₅: At home you cannot change the set up because already there are rules that you cannot break. What I have learnt I can only use it when I have my own home. You see when you get home you don't have to think about the things you learnt at school, in fact there is no chance for that. I have many house chores; I have to see to it my siblings are fed and food is ready for the supper before my mother comes home from work...you see.

I: Yes.....I see that, but what happens to the environment if we do not look after it?

S₅: In a way we will be contributing towards its destruction. If we don't look after our land it gets polluted and plants and vegetation die and that's an environmental problem. We need trees for oxygen and removal of greenhouse gases such as carbon dioxide.

I: Where have you learned about taking care of the environment?

S₅: At school. The effects of not caring for the environment are fatal...soil erosion...and many other dangers that we were taught might be fall us.

I: Does your teacher or parents encourage you to care for the environment?

S₅: Teachers yes, they usually talk about it during lessons, but outside the classroom nothing has ever been said. Parents have no idea about what environmental issues are, of course they have the traditional knowledge which is sometimes useful and sometimes not.

I: Which traditional information would you consider to be environmentally useful?

S₅: Cleanliness for instance is an issue that is desired by all people. At home they don't want to see papers scattered around, the problem only comes when the collected papers are burnt. You see the initiative is good but the solution becomes an environmental problem because burning papers causes a lot of air pollution.

I: Why don't you advise parents about the proper method of dealing with litter?

S₅: Parents at home have no time to listen to children when they speak. You cannot say to your mum my teacher said you must not do this and that....that's impossibility.

I: I see.....have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S₅: Yes I have watched a good number of environmental programs on television and most of them they are quite educational. I normally watch the program called 'the wild', it's really nice. I learnt that animals can talk the language we don't understand and they need protection from us. On that program they encourage people especially to campaign against rhino poaching. How could people kill such a large beautiful animal weighing 2000 tonnes for the sake of its horn weighing less than 5kg? It's really bad.

(a) School environmental conditions

I: How would you describe the appearance of our school grounds? Do you like it? Why?

S₅: Hmmm, it is like a dumping site for papers. You pick them in the morning at 8am by 10am it's like you didn't do anything. Collected papers are burnt and this is a health problem, the school ground and rugged and dusty. Soil erosion is not controlled as a result fallows of water ways have developed. Debris and broken window panes lie scattered around the school yard. The situation is really bad.

I: What do you think needs to be done?

S₅: I think the solution to our environmental problems within the school require the development of an environmental policy that would guide us as to who is supposed to do what. These problems require some serious engagement.

I: I see... How does the school dispose of litter? Do you think it is a good way to get rid of litter? If you were the principal how would you get rid of litter?

S₅: Rubbish bins are placed around the school yard where we drop pieces of paper and all the papers are taken to the dumping site where they are burnt. This is another

environmental hazard, burning paper causes a lot of air pollution. If I was the principal I would arrange with the waste collection companies.

Community environmental policy

(a) Micro

I: What kind of toilets do you have at home and do you like these kinds of toilets?

S₅: At home we use pit latrines and sometimes these toilets are so shallow such that when relieving yourself use all the filthy waste and these toilets are a really healthy problem. I don't like them at all, but I have no option because that is all that we have. The smell that comes from these toilets is really life killing, but we are poor we cannot afford the flush toilet system.

I: What can be done to improve the toilet system at home?

S₅: The government must build us proper flush toilet system and that way the toilet problem would be solved. Can you imagine a community at this time of age which is still using the bush if one is summoned by nature? It's quite sad to imagine that people at the location have perfect toilet system and the sewage flows to our place where it is treated before discharging it into our river system. Our rivers are now polluted and cattle and goats drink sewage contaminated water. This is real bad. If nice toilets are built for others why discriminate us.

I: How does the community dispose of its garbage?

S₅: Each home has its dumping site, where litter is sometimes burnt. Everything that we do at Mophela pertaining to waste management is a health hazard. At one time there was a garbage collecting van which used to pick up litter from collection points, but that project was aborted because of lack of payment by the municipality. Now the garbage is left idle over a long period of time and this becomes an eye sore and unsightly. In these dumping sites people dump anything you can ever think of...baby nappies, dead dogs. These dumping sites pose a lot of danger to children who see these sites as recreational facilities. Snakes and rats breed in these sites and this is a cause for concern as we have learnt that these animals transmit fatal diseases. To solve that problem people prefer burning papers at

home and this causes air pollution contributing to global problems such as scarcity of rain and the melting of ice.

Policies and Rules

I: What do you think could be done to reverse the destruction of the environment?

S₅: Sort litter according to its kind. Arrange a common dumping site for every one and let rubbish collectors come and pick up the litter from one common place.

I: Thank you very much and now I want us to concentrate on 'you' and your environment. Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S₅: Yes I sometimes watch the programs on especially on South African heroes. Those programs usually touch on environmental issues. Last time I learnt about somebody who was removing algae plants from water. They said if these plants are removed they reduce the oxygen content in water leading to the death of water animals such as fish.

I: Do you think that the environment around you is beautiful? Why? If you could change things what would you change to make it more beautiful?

S₅: Yes I love to see the environment beautiful and will always work hard in order to keep it clean. I will always pick up papers at home and at school in order to ensure that the yard is kept clean and smart.

Narrative 6 (Key: I – Interviewer, S₆- Interviewee)

Individual

Biographical information

I: Welcome to this brief interview about your knowledge concerning environmental issues. Please feel free to respond in whatever way for this is not an examination. You are free to refuse giving responses to questions you feel you are not comfortable with. Once again be

reminded that this interview will not be used in any way other than what was explained to you earlier on. Please briefly tell me your name, age, grade, where you live and the kind of homestead you live in.

S₆: my name is LungeloNgidi, I am 18 years old and currently doing grade 12 at Gabi Gabi secondary school. I live at Mophela communal area and the kind of home we live in was inherited from our ancestors. I am reliably told that we have lived here as a family for over four generations.

I: Who is the breadwinner at home? What is his/her profession?

S₆: My father is the sole bread winner at home and he is self-employed.

I: Besides your parents/guardian, how many adults live in the same house with you what are their sources of income?

S₆: I live with my grandmother as well as my sisters and both of them have no direct source of income besides the fact that granny is getting the pension grant and my sister earns the child support grant for her 3-year old daughter.

Knowledge about environmental issues

Sources

I: The aim of this discussion is to establish your understanding of the environment and related environmental issues and problems. Please feel free to express your feelings of concern about the environment and in every case try as much as possible to motivate your responses. Your real name will not be used instead pseudonyms will be used to represent your views. Perhaps as a starting point you can explain to me what you understand by the term environment and environmental education.

S₆: This is a topic that deals with nature and environmental problems. It seeks to explain the causes of environmental problems and how these problems could be reduced. I think that's basically that about environmental education.

I: Do you think environmental education successful? If yes how successful? If no, why is it so?

S₆: I would say it's successful in that I now understand and know the environmental problems such as soil erosion, pollution and many others. I now even understand the causes of these environmental and the ways of reducing them.

I: Have you succeeded in passing the message about the environment and environmental issues to others at home?

S₆: As children we have no space to air our knowledge to adults. Parents are not ready to listen to children especially on matters that they were exposed to over a long time. This is because they think that this education is leading us astray and we want to run oversee their activities yet they were there before we were born.

I: I see your point, but do you think that learning about the environment is important and if it is, what do you like about it?

S₆: Yes, what I like about the environmental education is that it gives me the opportunity to think about our future generations now and it also makes us conscious about nature. It helps in teaching us to act responsibly and in a manner that promotes the sustenance of natural resources. This is the subject that I wish to pursue after completing my matriculation.

I: Do you think you are getting the desired change in value, attitude and behaviour from learning about the environment? If yes, how? If no, what could be responsible for that?

S₆: My learning about the environment did change my attitude and equally supported those things that I was doing which were positive environmentally.

I: Which are those environmentally positive things which you were doing prior to attaining the environmental knowledge?

S₆: Planting of trees especially the indigenous ones has always been my business at home. You see at home we are still doing traditional farming. We grow crops for our survival and when environmental education encourages us to plant vegetation so as to prevent soil erosion and increase the number of plants that will remove excess carbon dioxide in order to prevent global warming, it comes as reinforcement to all what we are already doing. It's like we are told what we are already practising.

I: Do you think other people have sufficient knowledge about the environment?

S₆: I don't think most people particularly learners have sufficient knowledge about the environment and the environmental issues. I think as we learn learners look at these environmental problems as if they are caused by other people from another planet and developed countries. People expect some other countries or continents to act responsibly in order to protect us. It's like we are not prepared to own our destiny. People are just saying that the level of air pollution caused by us is insignificant and it cannot affect other continents or countries.

I: What could be done then?

S₆: the government through the department of education should intensify the concept of the environment and environmental education. If we take look at what is currently happening at out of 1500 leaners only 120 learners are exposed to environmental education and these are the students who are doing life sciences which has a component of environmental education. This number is too small to influence the whole school community.

I: Does your environmental education teacher or principal encourage you to care for the environment? If so how?

S₆: Teachers only teach, but do not encourage us to engage in activities that promote the conservation of the environment.

We have a good crop of teachers who have thoroughly taught us about the environment and the environmental issues. We now know what those issues are and how the effects of these issues can be minimised. What has never happened is for the teachers to initiate environmental projects that promote a positive environmental attitude.

I: Substantiate your argument by explaining why you think teachers are not concerned about environmental issues, but about academic excellence.

S₆: If you look around the school, there is litter everywhere, broken windows, unsightly dumping sites, gullies due to erosion and the indiscriminate burning of papers. This is a sign that environmental education is not taken seriously. Teachers and the principal only want us

to pass and go to the university and I don't blame them for that because that is the major purpose of going to school.

If you look around they are many environmental ills that environmental education seeks to rectify, yet on the ground nothing is being done. I wouldn't call this negligence, but would like to suggest that may be we are expecting too much from our teachers. Another example of a sensitive environmental issue is that our school premises are bare and dusty and in environmental education we are told that dust consist of lead metal which is dangerous to children, but at our school children are exposed daily to this hazard and nothing is being done.

I: What school programme do you think should be implemented in order to change the environmental attitude of both learners and teachers?

S₆: As a school we need a reliable van that collects waste paper for recycling. Non-recyclable material must be sent to land fill zones. The school yard must be well maintained in order to control erosion, as it is children cannot play freely during break times because of fear of getting hurt over the erosion caused gullies. The school must design erosion minimising programs. We need to plant trees and grass around the school yard in order to reduce erosion and just to make our yard welcoming and friendly. These programs must reflect the nature of the school environmental policy.

Community environmental policy

Micro

I: Thank you very much for giving me your opinion about the environment and environmental issues at your school, perhaps now we need to look at these issues outside the school. What kind of toilets do you have at home and do you like those kinds of toilets? Substantiate your responses

S₆: Small pit latrines and I like nothing about those kinds of toilets. They are smelly, filthy and it's flies all over. Honestly speaking I nothing about pit latrines. We get sick again and again because of those kinds of toilets, for instance the whole of last week I never attended

any lessons because I had serious runny stomach, I therefore suspect that it's linked to the latrines.

I: What can be done to solve this environmental problem?

S₆: As a community we need the government to build us proper toilets as what is happening in townships. For us it is even cheaper because we have sewage works within the community and I believe it won't be expensive to pump water-sewage combination to the treatment site.

I: Why were these sewage treatment ponds built in your area?

S₆: I am not too sure, but I believe this is the only space which was available, the only thing which I see as unfair is the fact that the community is not benefiting directly from the presence of these treatment dams.

I: How does the community dispose of its garbage such as papers?

S₆: We normally burn papers and bury non-biodegradable waste such as bottles and broken window panes. You see burning of paper is not environmentally friendly, but at home we have no alternative. We just have to take instructions from adults because a child is just a child.

I: I understand what you mean, are there any environmental ills that you experience at home?

S₆: The indiscriminate cutting down of trees by people building their own houses is another environmental issue which is worrying. You see some people cannot afford to buy timber and roof supporting material from hardware stores as a result they use naturally existing timber to build their houses and this gives stress to the natural forests that we have. As we know from our environmental studies that disappearance of natural forests is an environmental concern because it reduces the ability of nature to control the rise of carbon dioxide in the atmosphere.

I: What can be done in order to alleviate this environmental issue?

S₆: I think, there are two possible ways of dealing with the destruction of natural forests one of which is the campaign against the cutting down of trees and this can be done through environmental education. The subject should be taught to all learners regardless of whether they are science students or not and this would help raise a generation of environmentally conscious society. The second way is that the government must build subsidised houses so that even the poorest of the poor can afford at least to have shelter.

I: Thank you very much and now I want us to concentrate on 'you' and your environment. Have you ever watched television programs with environmental messages? Tell me a little about these programs. What did you learn from it? Were you able to use the information?

S₆: I don't usually have time to watch television programs because in most cases I'm busy with my school work or working on the fields because I have a passion for growing crops and that was inculcated in me. I remember at one time I watched another program which was talking about dust pollution in a certain mining compound in Rustenburg and that programme was demonstrating how the mining company was attempting to reduce dust through the growing of trees. I liked the programme because it was related to something which I was also doing.

I: Thank you very much for the all the discussion which we had and should I need some clarification on any matter I would consult you.

