DEVELOPMENT OF A SCHOOL ENVIRONMENTAL POLICY TO ENABLE ACTIVE LEARNING IN THE CONTEXT OF THE NATIONAL CURRICULUM STATEMENT

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ABSTRACT

The transformation processes occurring in the South African curriculum context has highlighted a need for improving ways of interpreting and implementing curriculum requirements, in ways that are relevant to the context of learners and their experiences. Outcomes Based Education (OBE) encourages teachers to develop learner centred and active learning approaches.

In this research I explore the development of how a School Environmental Policy can contribute to active learning in the context of the National Curriculum Statement for Grades R-9 (NCS R-9). I employed a participatory action research approach in which I worked with other teachers in my school to develop a School Environmental Policy, and then implement associated lessons. In cycle 1 this research focused on the School Environmental Policy development processes. In cycle 2 the research focused on designing and implementing three Lesson Plans in Makana Public Primary School (in three phases).

I used a range of data generation strategies such as observations, use of a reflective journal, semi-structured interviews, focus group discussions, a workshop, photographs and document analysis to generate data for the study. All participants collaboratively discussed and agreed upon the research, and the two teachers who developed the lessons with me also reflected on the process of Lesson Planning and active learning, but I was responsible for the final interpretation presented in this thesis.

The research indicates that the School Environmental Policy led to the planning of active learning processes and that the School Environmental Policy and the active learning approach are consistent with OBE policy and philosophy.

The study also indicates that the School Environmental Policy and the active learning approach strengthened the use of Learning Outcomes, but not necessarily Assessment Standards and that the active learning approach promoted enquiry in lessons.

The research further indicates that the School Environmental Policy and active learning processes contributed to school improvement and work towards a healthy environment. The School Environmental Policy also encouraged educators to address school community environmental issues and build stronger links with parents.

The study also led to a set of recommendations to improve the School Environmental Policy and active learning process in ways that address the NCS requirements for learning and assessment.

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TABLE OF CONTENTS

SECTION		PG
	Abstract	i
	Acknowledgements	iii
	Table of contents	v
	List of figures, tables and appendices	vii
	CHAPTER 1 OVERVIEW OF THE STUDY	**1**
1.1	INTRODUCTION	1
1.2	RESEARCH QUESTION AND GOALS	1
1.3	MAKANA PUBLIC PRIMARY SCHOOL	2
1.4	OVERVIEW OF THE RESEARCH	5
1.5	CONCLUDING SUMMARY	5
	CHAPTER 2 CONTEXT OF STUDY	**7**
2.1	INTRODUCTION	7
2.2	ENVIRONMENT IN SOUTH AFRICA'S NEW CURRICULUM	7
2.2.1	Environmental education, OBE and change	7
2.2.2	Outcomes and Principles of the NCS (R-9)	11
2.2.3	Content and context in the NCS (R-9)	14
2.2.4	School community interactions	17
2.3	SCHOOL ENVIRONMENTAL POLICIES AND ACTIVE LEARNING	18
2.3.1	Eco-Schools, Environmental Policy and Active learning	18
2.3.2.	New approaches to learning in OBE	21
2.3.2.1	Changes in views about learning and expectations of the educator	21
2.3.2.2	Active learning, constructivism and situated learning	23
2.4	IMPLICATIONS FOR LESSON PLANNING	30
2.5	CONCLUSION	33
	CHAPTER 3 RESEARCH DESIGN AND DECISIONS	**35**
3.1	INTRODUCTION	35

3.2	METHODOLOGY AND METHODS	35
3.4	DATA GENERATION	38
3.4.2	Participation observation	39
3.4.3	Document analysis	40
3.4.4	Interviews	41
3.5	DATA ANALYSIS	42
3.6	TRUSTWORTHY	43
3.7	ETHICS AND TRUSTWORTHY	44
3.8	CONCLUDING SUMMARY	45
	CHAPTER 4 CYCLES OF ENQUIRY: POLICY DEVELOPMENT AND ACTIVE LEARNING	**46**
4.1	INTRODUCTION	46
4.2	CYCLE 1: THE POLICY DEVELOPMENT PROCESS	46
4.2.1	Planning the policy development process	46
4.2.2	Developing the School Environmental Policy	47
4.2.3	Reflections on the policy development process	51
4.3	CYCLE 2: THE ACTIVE LEARNING PROCESSES	52
4.3.1	Planning the lessons	52
4.3.2	Teaching the lessons	57
4.3.2.1	Orientation and overview	57
4.3.2.2	Brief description of each lesson process	58
4.3.2.3	Teaching methods	63
4.3.2.4	Learner participation	73
4.3.2.5	Evidence of learning	80
4.3.3.1	Reflections on implementing the lessons	83
4.3.3.2	Teaching methods	84
4.3.3.3	Learner participation	84
4.3.3.4	NCS (R-9) Learning Outcomes and Assessment Standards	85
4.3.3.5	Difficulties and benefits of implementing active learning approaches	86
4.4	CONLUDING SUMMARY	87
	CHAPTER 5 SCHOOL ENVIRONMENTAL POLICY AND LINKS TO ACTIVE LEARNING	**89**

5.1	INTRODUCTION	89
5.2	EVIDENCE OF ACHIEVED POLICY GOALS	90
5.3	ANALYTIC STATEMENT 1	93
5.4	ANALYTIC STATEMENT 2	94
5.5	ANALYTIC STATEMENT 3	96
5.6	ANALYTIC STATEMENT 4	102
5.7	ANALYTIC STATEMENT 5	104
5.8	ANALYTIC STATEMENT 6	105
5. 8	CONCLUDING SUMMARY	107

CHAPTER 6 SUMMARY AND RECOMMENDATIONS **110**

6.1	INTRODUCTION	110
6.2	SUMMARY OF THE STUDY	110
6.3	RECOMMENDATIONS	112
6.3.1	Recommendation 1	112
6.3.2	Recommendation 2	112
6.3.3	Recommendation 3	113
6.3.4	Recommendation 4	113
6.3.5	Recommendation 5	114
6.3.6	Recommendation 6	114
	REVIEW AND IMPROVEMENT OF THE SCHOOL ENVIRONMENTAL POLICY	115
6.3	REFLECTIONS ON THE RESEARCH PROCESS	116
6.5	CONCLUSION	117
	REFERENCES	118
	APPENDICES	124

LIST OF FIGURES, TABLES AND APPENDICES

FIGURES

Figure 1	School buildings	3
Figure 1.2	Picture of the school emblem	4
Figure 2.1	Active Learning Framework (O'Donoghue, 2001:8)	25
Figure 3.1	Learners engaged in activities	41
Figure 3.2	Face to face interview with both educators	41
Figure 4.1	Commissions during the workshop	48
Figure 4.2	Scribe taking note during the workshop	48
Figure 4.3	School Environmental Policy	50
Figure 4.4	Lesson Plan, Grade 5	54
Figure 4.5	Lesson Plan, Grade 2	55
Figure 4.6	Lesson Plan, Grade 8	56
Figure 4.7	Trophies from waste made by learners 59	
Figure 4.8	Activity worksheet on learning to grow prepared by the teacher	59
Figure 4.9	Activity worksheet on renewable and non- renewable waste prepared by the teacher	61
Figure 4.10	Activity worksheet 5 on the dump site visit	62
Figure 4.11	Learners collecting waste	64
Figure 4.12	Educator explaining new vocabulary to one of the groups	64
Figure 4.13	Learners drawing a mind map, to map ways of influencing the school to undertake a recycling project	65
Figure 4.14	Learners recording their seeds	66
Figure 4.15	Learners counting seeds	67
Figure 4.16	Learners measuring the garden plots	68
Figure 4.17	Learners planting their plots	69
Figure 4.18	One of the posters designed by the groups	70
Figure 4.19	Learners answering prepared worksheet about the dumpsite	71
Figure 4.20	Poems by learners	71
Figure 4.21	Learners interviewing residents of the community	72
Figure 4.22	Educator explains to the learners	72
Figure 4.23	Learners reporting back their programme of action	72

Figure 4.24	Groups of learners collecting different waste	73
Figure 4.25	Learner working alone	74
Figure 4.26	Learners counting seeds	75
Figure 4.27	Completed learner worksheet	76
Figure 4.28	Learner's mind maps	77
Figure 4.29	Group of learners analysing audit sheet	78
Figure 4.30	Learners bar graphs produced by learners	78
Figure 4. 31	Learners interview questionnaire	79
Figure 4.32	Examples of letters produced by learners after corrections	80

TABLES

Table 2.1	Environmental focus in the NCS Learning Areas (NEEP-GET, 2005:8)	9
Table 2.2	Environmental and social relationships in selected Learning Outcomes	12
Table 2.3	Environmental content in Assessment Standards and Learning Outcomes	13
Table 2.4	Relationship between Learning Outcomes, Assessment Standards and contextual issues	15
Table 3.1	Cycles of enquiry	37
Table 4.1	Summary of responses from the four commissions	49
Table 5.1	Evidence of achieved policy goals	90
Table 5.2	Shows expected achievements according to Assessment	98
Table 5.3	Shows knowledge, skills and values gained by learners	99
Table 5.4	Active Learning processes promotes enquiry	103

APPENDICES

Appendix 1	FGD-1
Appendix 2	FGD- 2
Appendix 3	Observation schedule (cycle1)
Appendix 4	Observation schedule
Appendix 5	Access letter
Appendix 6	SEP meeting minutes
Appendix 7 a	School Environmental Policy

Appendix 7b	School Environmental Policy analysis
Appendix 8 a, b, c, d & e	Learners work analysis
Appendix 9	Structured interview schedules
Appendix 10	Coding of first phase analysis
Appendix 11	08 March meeting
Appendix 12	Audit sheet
Appendix 13	Focus group discussion observations
Appendix 14	Journal reflections
Appendix 15	Worksheets 3 (Grade 2)
Appendix 16	Worksheet 4 (Grade 2)
Appendix 17	Grade 5 comprehension
Appendix 18	Poster
Appendix19 a, b& c	Field trip pictures, learners work & assessment tool (Grade 2)
Appendix 20	Worksheet 2 (Grade 2)
Appendix 21	meeting with ward members
Appendix 22	No dumping sign

CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

This chapter introduces the research focus and provides background to the study. The chapter also gives a brief overview of the reasons why I undertook the study and further introduces the aims of the research. The research is situated within the context of the revised National Curriculum Statement for Grades R-9 (NCS R-9) and the Eco-Schools programme.

The chapter further briefly outlines my role as an educator in Makana Public Primary School in Grahamstown in the Eastern Cape. The introduction of the NCS (R-9) and the results of a school contextual profile I developed motivated me to explore the link between active learning in schools and a School Environmental Policy.

The chapter also provides a brief outline of the structure of the chapters in the thesis.

1.2 RESEARCH QUESTION AND GOALS

According to McNiff, Lomax & Whitehead (1996:38, cited in Mbanjwa 2002:2) a responsible researcher needs to be reasonably clear why s/he wants to get involved in the research. Lotz (1996:16) indicates that a research project cannot be conceptualised without a focus or a research question. Maxwell (1996:14) indicates that purpose in research helps to guide research design decisions and is crucial to justify the study.

In an earlier contextual profile which I developed for Makana Public Primary school (Mvula-Jamela, 2004), it was noted that the school and the community are faced with numerous environmental and social issues and risks such as poverty, environmental degradation, inadequate sanitation, HIV and AIDS, unemployment and lack of parental involvement, and there is not much evidence of team work amongst educators in the institution. This research responds to environmental issues that were identified in the contextual profile through development of a School Environmental Policy that is aligned and integrated with the new curriculum requirements, with particular emphasis on active learning processes.

The **aim** of this research is to investigate how development of a School Environmental Policy can contribute to active learning in the context of the NCS (R-9). The associated **research question** is: "How can development of a School Environment Policy contribute to active learning in the context of the NCS (R-9)?"

In this case study I used the Eco-Schools Toolkit to support participatory School Environmental Policy development processes and to develop active learning opportunities (see section 2.3.1 for more information on the Eco-Schools programme). I worked with two educators in the same school to explore active learning approaches in the school grounds (also using the school food garden) as this provides a useful learning resource in the school. The anticipated benefit of this process is that it can enable learners to learn about key issues of the environment while actively participating in resolving environmental problems at the local level.

The **goals** which guided this research include:

- Develop a School Environmental Policy through a participatory process that supports active learning in the school.
- Investigate how the School Environmental Policy stimulates active learning.
- Observe active learning processes, with a view to providing feedback for revision of the policy statement.

1.3 MAKANA PUBLIC PRIMARY SCHOOL

The research is influenced by my work as a teacher in Makana Public Primary School. All teachers in South Africa are currently experiencing changes in the requirements of the curriculum as the NCS (R-9) is introduced. As mentioned above, our school also experiences numerous social and contextual environmental issues. I am a senior phase teacher, primarily responsible for Economic and Management Sciences in Grades 7 and 8, but I am also active in supporting environmental education and development programmes in the school such as establishing a school food garden so as to alleviate poverty. I am responsible for the food kitchen and facilitate children gettting a meal, I work with students towards greening the school, and work with learners to identify places for improvement in the school. I also represent the school in environmental education forums.

Makana Public Primary School (see figure 1.1 below) is positioned in the Makanaskop (Joza) location in the Makana District Municipality in Grahamstown. It is situated in an area characterised by non-formal housing settlements, although there are more permanent houses in some parts of the area. It is a poverty-stricken environment and there are many disturbances that affect the security of learners attending school. Learners often witness fights and quarrels amongst people nearby. The school has a population of about 400 learners and educators who mainly reside in the surrounding community, and it is surrounded by a residential area, another school and a church.

Figure 1.1 School buildings

According to the founder Principal Mr G. Mdyesha and my observations, the school was established in April 1962 and was established as a combined school, offering programmes from Sub A (Grade 1) to Std 6 (Grade 8). This school was the first school established in the new location called Makanaskop and this is how the school got its name. At first there were serious problems because there was not a single desk in the school. Human resources were also a problem.

The school started with about 650 learners under the principalship of the famous and well-respected Mr G. Mdyesha. Learners who registered at Makana were from the neighbouring locations like Tantyi, Fingo Village and nearby farms. This was because the learners' parents relocated to Makanaskop location permanently and their children had to be transferred from farm schools to Makana School.

The main language spoken in the community is isiXhosa hence the school is mainly dominated by isiXhosa speaking learners. The school's language of learning and

teaching (LoLT) is English and isiXhosa is the second language. It is a mixed school, comprising both boys and girls. Learners belong to different religious denominations.

The school has an emblem and a slogan that reads as follows: "*Imfundo isimemelela ekukhanyeni*" which means "education enlightens". It has the following features:

- School bell-symbolises calling the learners to come to school,
- Open book-resembles what learners benefit from school, and
- Sunlight - resembles what learners can become.

Figure 1.2 Picture of the school emblem

The school also has a vision and mission statement which guides activities in the school:

VISION

It is our vision to provide learners with a well-rounded quality education that will have the necessary knowledge, attitudes, skills and values that will contribute to meaningful roles in the community and broader society.

We, the community of Makana Primary School, are committed to strive for the values that will harness the co-operation of all stakeholders to provide the best support and achieve this goal.

MISSION

To provide a safe, pleasant environment conducive to teaching and learning.
To provide the best resources we can, both physical and human.
To create a sense of pride and ownership of the school and what it stands for.
To develop the learner to be able to leave this institution as a responsible, independent and globally competent human being (Makana Public Primary School, 2005).

At the start of the 21st century, the school is under the supervision of its 4th principal. It is run according to the expectations of the South African School's Act (SASA) (RSA, No. 84 of 1996b). SASA envisages schools that are competent, self-independent and which encourage parental involvement. It is within this context that the School Environmental Policy initiative was established at Makana Public Primary School as part of this research.

1.4. OVERVIEW OF THE RESEARCH

Chapter 1 introduces the research and outlines the background of the study, and its aims and goals. It explains the context of my work and its relations to the study.

Chapter 2 describes the historical and contextual factors influencing the study. This chapter highlights recent education policies relevant to the research focus. It considers factors that influence the development of School Environmental Policy, with a view to promoting active learning and community links. It also reflects on the role of the learner and the educator in the process of learning. In this chapter, I discuss active learning in the context of outcomes-based education in South Africa. The role of School Environmental Policy is further contextualised through a review of the environmental focus in South Africa's new outcomes-based curriculum, the NCS (R-9).

Chapter 3 explains the methodology applied in the study, and the associated research process. It describes the research design decisions and explains that the research was conducted as a participatory action research case study as it aims to contribute towards social change in the locality (Carr & Kemmis, 1986). It provides details on how the participatory action research and case study approach was applied, as well as the methods employed in the study. It further explains how various methods were used in the study to collect data and, how data was analysed, and discusses issues of trustworthiness, validity and ethical considerations within the study.

Chapter 4 presents the context of the study and describes the two action research cycles that make up the study. It firstly describes the development of the School Environmental Policy, reporting on the planning, development and reflection phases. It then describes the related active learning process in three classrooms, describing the planning, implementation and reflection phases. It draws on data generated

during the fieldwork process. Using thick descriptions of what transpired it provides a detailed review of the action research process.

Chapter 5 provides a deeper analysis of the active learning approach to learning and also presents insights into the links between the School Environmental Policy, active learning and the NCS (R-9). It analyses how the School Environmental Policy created various opportunities for active learning, and analyses the relevance of these active learning processes in the context of outcomes-based education philosophy and the NCS (R-9) requirements. It also analyses the contributions that the School Environmental Policy and active learning processes have made to improved school-community relationships, and highlights areas that require additional attention in further active learning approaches in the context of the requirements of the NCS (R-9).

Chapter 6 provides a summary of the research, and draws attention to key issues related to the research questions described in section 1.2. It also provides a set of recommendations to inform a review of the School Environmental Policy in Makana Public Primary School, and recommendations to strengthen active learning in the context of the NCS (R-9) and the Eco-Schools programme. Finally, I reflect on the research methodology and the process of the research.

1.5 CONCLUDING SUMMARY

In this chapter I have provided an overview of the focus and aims of study. I have provided background information on the context where the study took place and details on my work profile as it relates to the study. I have outlined the various chapters of the research report. In the following chapter I will describe the context of the study in more depth, as it relates to policy and theory.

CHAPTER 2
CONTEXT OF STUDY

2.1 INTRODUCTION

This chapter reflects on and provides an analysis of the contextual dimensions influencing the study. It provides insight into the broader context in which I carried out the research. In this part of the study I firstly discuss the changes taking place in South Africa's education system, drawing particular attention to the recent National Curriculum Statement (R-9), and I discuss how environmental education has come to be integral to the NCS (R-9).

I then examine some of the features of the new curriculum, namely its Learning Outcomes and Principles, and the relationship between content and context which introduces new approaches to teaching and learning. I also discuss school-community interactions as these have recently been emphasised as an important dimension of curriculum change in South Africa. It is in this context that I introduce School Environmental Policy, and the Eco-Schools programme, which supports active learning in outcomes-based education (OBE), and school community links.

Given the focus on active learning in this study, I then discuss active learning in OBE, and review constructivist theories of learning, and theories of situated learning, to provide insight in this aspect of the study.

2.2 ENVIRONMENT IN SOUTH AFRICA'S NEW CURRICULUM

2.2.1 Environmental education, OBE and change

Schooling in South Africa has undergone radical changes with the implementation of OBE starting in 1996. OBE introduces a new framework for learning-one which offers many opportunities for including environmental education processes within formal school curricula.

Environmental education has come a long way in the past decade. Historically, environmental concerns were seen as something external to the curriculum,

something that could be added to lessons to make them exciting or to improve environmental learning in an *ad hoc* way (Hoffman, Timmermans, & Wigley, 2005). In this text (*ibid.*), the authors explained that very few educators were able to integrate these unplanned environmental learning activities into the classroom curriculum.

Recent endorsement of environmental education at policy level has helped to establish a more formal approach to environmental concerns in the South African curriculum. The South African Constitution (RSA, No. 108 of 1996a) enshrines citizens' rights to an environment that is not detrimental to their health and well-being. This has informed the development of numerous policies to protect the environment (Lotz-Sisitka & Raven, 2001). The effectiveness of these policies depends upon a high level of environmental literacy among citizens and as such environmental education processes have a key role to play in "...enabling citizens to improve environmental management practices in all walks of life, and to make sustainable life-style choices" (Lotz-Sisitka & Raven, 2001:2; O'Donoghue, 2001).

The 1995 White Paper on Education and Training (RSA, 1995:13a) emphasised the need for an "interdisciplinary, integrated and active approach to environmental education" in all levels and phases of education and training. These developments have led to the defining of an environment and sustainability focus in all Learning Areas, which also takes into account the context of learners (NEEP- GET, 2005a). This environmental focus is guided by the Learning Outcomes and Assessment Standards as described in the NCS (R-9). In the NCS (R-9) environment and opportunities for environmental learning have been consciously incorporated into the curriculum in an integrated way (NEEP-GET, 2005a).

Many of the Learning Areas include environmentally orientated Learning Outcomes and Assessment Standards. For example: Life Orientation Learning Outcome 1 emphasises health promotion and includes a focus on environmental health. Learning Outcome 3 in Geography includes an Assessment Standard which requires that the learner "Identifies and describes issues affecting personal health or safety in the school and / or home environment" (DoE, 2002a:13). The Technology Learning Area, on the other hand, requires that learners focus more on environmentally sustainable options in design and that they consider relationships between science, technology and the environment (Lotz-Sisitka, 2004). Table 2.1 below shows the environmental focus in the eight Learning Areas in the NCS (R-9).

Table 2.1 Environmental focus in the NCS Learning Areas (NEEP-GET, 2005:8)

Natural Sciences	Emphasises the importance of biodiversity and life support systems.
Social Sciences	Emphasises learners' ability to identify and analyse a range of environment and development issues.
Life Orientation	Emphasises environmental health, and makes links between human health and environmental health risks (e.g. water pollution).
Economic and Management Science	Emphasises sustainable development and growth, and calls for approaches to reduce waste and protect resources.
Arts and Culture	Considers the importance of cultural and natural heritage.
Technology	Emphasises the importance of environmentally friendly designs, and encourages learners to investigate technological impacts on the environment.
Languages	Develops critical literacy skills needed to analyse and address environmental issues and risks.
Mathematics	Develops numeracy skills needed to analyse and address environmental issues and risks.

According to my observations, environmental education in schools is generally treated as incidental and is not considered to be contributing to the culture of the school. Educators act compartmentally within their Learning Areas and there is no consistent approach to address topics involving the environment. The conclusions of the National Environmental Education Project for General Education and Training (NEEP-GET) pilot project and the subsequent NEEP-GET project (Lotz-Sisitka & Raven, 2001; NEEP-GET, 2005a) suggest that my observations are more broadly reflected in the South African context. These reports support my observations that environmental education activities are superficial and not contextualised within the Learning Areas to enhance active learning as outlined in the NCS (R-9). As indicated above, opportunities for environmental learning are situated in all Learning Areas and in many Learning Outcomes and Assessment Standards. Teachers now have opportunities for developing environmental learning that emerge from the curriculum in a generative way (Hoffman et al. 2005).

Informed by the transformation processes occurring in the South African curriculum context and in my school, there is a need to improve ways of interpreting and implementing the new curriculum requirements in ways that are relevant to the context of the learners and their experiences. This is supported by researchers such as Janse van Rensburg and Lotz (1998), Mbanjwa (2002) and Nduna (2003) who note that curriculum development and growth of knowledge and understanding of environmental issues and risks is influenced by the context where learning is taking place. As noted above, the Department of Education (DoE, 2002a) emphasises that

the curriculum should develop learners that are sensitive to the environment as outlined in this quote from the overview statement of the NCS (R-9):

> The curriculum aims to develop the full potential of each learner as a citizen of a democratic South Africa. It seeks to create a lifelong learner who is confident and independent, literate, numerate, and multi-skilled, compassionate, with respect for the environment and the ability to participate in society as a critical and active citizen (DoE, 2002a:8).

Lotz-Sisitka (2002:101) comments on the opportunities provided by this new policy framework and indicates that it introduces a new role for the educator. The role of the educator in the OBE curriculum is to mediate active learning processes and scaffold learning process that should be contextually relevant and foster change (Russo & Lotz-Sisitka, 2003; DoE, 2001; Nduna, 2003). Lotz-Sisitka (2002) further emphasises the role of the environmental focus in the curriculum, and notes that it may play a role in enabling greater reflexivity in response to environmental issues. In the light of the above, the research aims to investigate development of a School Environmental Policy, and its links to the planning and implementing of active learning processes, which have the potential to contribute to social change. Janse van Rensburg (1995:168, cited in Lotz-Sisitka, 2004/5:4) articulated environmental education as a process of social transformation, and

> ... recommended not only critical perspectives but a reflexive perspective or orientation to change, which emphasises process rather than product, which is not concerned with a linear model of change, which does not rely on doctrines, tools or methods to bring about change.

Lotz-Sisitka (ibid) notes that Janse van Rensburg sees environmental education as a "... responsive process of change involving the development capabilities to deal with and encourage change in local context". These perspectives highlight the importance of environmental education in the curriculum and support the principles of the envisaged curriculum that encourage collaborative inquiry and lifestyle choices that will contribute to social change (Lotz-Sisitka & Raven, 2001).

As shown in the Eco-Schools programme, School Environmental Policies have the potential to generate a hands-on and practical (active learning) approach to environmental activities and change in schools, which link to the Learning Outcomes, Assessment Standards and the Critical and Developmental Outcomes (Lotz-Sisitka, Ward and Timmermans, 2004). The NCS (R-9) introduces Learning Outcomes and

Principles that the educator should take into consideration when planning lessons. The next sub section will discuss these in more detail.

2.2.2 Outcomes and Principles of the NCS (R-9)

In the old education system the syllabus was pre-determined and structured according to content. Teachers had little opportunity to engage in the curriculum development processes. The new curriculum (the NCS) requires teachers to become more actively involved in developing Learning Programmes, Work Schedules and Lesson Plans using Learning Outcomes, Assessment Standards and Principles (DoE, 2002a). These Learning Outcomes and Assessment Standards provide opportunities for learners to develop many different skills such as making judgments, doing research, making decisions and thinking critically (DoE, 2002a).

In South Africa, Curriculum 2005 was the first version of the OBE curriculum. It brought many changes to teaching and learning processes. With the revision of C2005 (which created the NCS R-9), the outcomes-based fundamentals remained the same. Outcomes-based education embodies a process of lifelong learning with Learning Outcomes that should be achieved at the end of the learning process. Continuous assessment based on a criterion-referenced approach to assessment is used to monitor learner achievement and progress, and it focuses on each learner reaching his/her potential. In the NCS (R-9), a learner has to demonstrate skills, knowledge and values described in the Learning Outcomes (DoE, 2002 a) to progress from grade to grade. Learning Outcomes and Assessment Standards which indicate progression from grade to grade ensure that activities will not be superficial, and set a standard for appropriate achievement of knowledge skills in different grades. This further ensures that learning activity tasks progress from grade to grade. Through this, the Department of Education intends that 'high knowledge' and 'high skills' are developed through the curriculum (DoE, 2002a).

Learning Outcomes described in the NCS (R-9) are guided by goals set out in the South African Constitution (Act No. 108 of 1996). Drawing on these goals, the curriculum policy aims to develop the full potential of each learner as a citizen of a democratic South Africa through five Principles that shape the NCS (R-9):

- **Principle1:**Social justice, a healthy environment, human rights and inclusivity.
- **Principle 2:** Outcomes-based education.
- **Principle 3:** A high level of skills and knowledge for all.

- **Principle 4:**Clarity and accessibility.
- **Principle 5:** Progression and integration.

Each of these Principles provides useful direction for Lesson Planning, and it is important that these 5 Principles should work together (NEEP-GET, 2004). As mentioned above, these 5 Principles build on the vision and values of the Constitution of South Africa. And influence all Learning Programmes, Work Schedules and Lesson Plans.

Wide ranges of environmental learning opportunities have been incorporated into the different Learning Areas of the NCS (R-9). A number of Learning Outcomes focus directly on environment, while other Learning Outcomes can help to strengthen environmental learning processes in the curriculum (NEEP-GET, 2004). Here are some examples:

Table 2.2 Environmental and social relationships in selected Learning Outcomes

Selected Learning Outcomes	How the learning outcome reflects environmental learning
LO 1: Life Orientation: The learner will be able to make informed decisions regarding personal, community and environmental health.	Focuses directly on the environment by promoting health, learners are required to make informed decisions regarding personal, community and environmental health.
LO 3: Natural Sciences: Understand the impact of science and technology: Suggest ways to improve technological products or process and to minimise negative effects on the environment.	Focuses directly on the environment by ensuring that learners are able to demonstrate and understand the interrelationships between science, technology, society and the environment.
LO 3: Social Sciences: Exploring issues, Learners will be able to make informed decisions about social and environmental issues and problems.	Focuses directly on the environment by encouraging the learner to investigate, and make informed decisions about social and environmental issues and problems.
LO 2: Languages: The learner will be able to communicate confidently in spoken language in a wide range of situations.	Helps to strengthen environmental learning processes by using language for a range of functions, to express opinion and feelings. Helps to develop critical literacy which is important for environmental learning.
LO 2: Economic and Management Sciences: Sustainable Development: The learner will be able to demonstrate an understanding of sustainable growth, reconstruction, development, and to reflect critically on related processes.	Helps to strengthen environmental learning processes by exploring sustainable growth and management choices.

As shown in the discussion on Learning Outcomes above, environmentally-orientated Learning Outcomes emphasise the relationship between the environment, science and technology, as reflected in Critical Outcome no. 7 which states that at the end of

their learning processes learners should be able to "Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation." The Learning Outcomes also emphasise environmental health issues, outlined in the Life Orientation Learning Outcome listed in Table 2.2. The Learning Outcomes also introduce a focus on resource management and the conservation and re-use of resources, as well as an issue-based approach to engaging with the environment in the curriculum. Learning Outcomes therefore provide a broad 'content focus' which is more specifically determined by the Assessment Standards and by specified content in different Learning Areas Statements, as illustrated in Table 2.3 below.

Table 2.3 Environmental content in Assessment Standards and Learning Outcomes

Learning Outcomes	Assessment Standards (with implicit content)	Associated Content
LO 1: Life Orientation	Participate in recycling project , and explain how recycling contributes to environmental health.	Recycling approaches.
LO 3: Natural Science	Conduct investigations and collects data: conducts simple tests or surveys and records observations and responses.	Water pollution, Water auditing, Biodiversity.
LO 1: Economic and Management Science	Needs and wants (impact on communities and environment)	Different goods and services. Saving strategies for resources.

These Learning Outcomes illustrate how the Principle focussing on social justice, a healthy environment, human rights and inclusivity has been integrated into different Learning Areas. This curriculum structure makes it easy for educators to create opportunities for environmental learning, based on the context of the learners which also respond to environmental issues in school and community context. Social justice means that the basic needs of all citizens should be met and that there should be equal opportunities to improve lives. The NCS (R-9) creates awareness and sensitivity to issues of inequality, race, gender and inclusivity, and through emphasising the relationship between social justice, human rights, inclusivity and a healthy environment, the NCS (R-9) also draws attention to the way in which natural resources are used and distributed in society for both present and future generations. It is therefore emphasises people–environment relationships, as well as social relationships.

As discussed above, the Principle statement emphasises 'a healthy environment' and links this to concerns of social justice, human rights and inclusivity. This too has implications for content as described in this quote from a NEEP-GET publication:

> [the NEEP-GET] ... focused on the relationship between human rights, social justice, inclusivity and a healthy environment, and explored the transformatory potential in this relationship. For example think of developing a lesson on water. If this lesson was developed with a focus on a 'healthy environment' only the teacher may only focus on the health of water (biodiversity focus). When 'water' is interpreted with the 'lens' provided by the first Principle statement, the teacher may consider not only the biophysical dimension of water issues, but also human rights, social justice and inclusivity issues associated with water, (i.e. who has access to water, is free access to water a fundamental human right etc.) (NEEP-GET, 2004:4).

2.2.3 Content and context in the NCS (R-9)

Content included in the NCS (R-9), as outlined above, is closely linked to environmental legislation passed by government in response to the environmental clauses in the Constitution, such as the National Environment Act (1998), the National Water Act (1998) and the National Biodiversity Act (2004), to ensure adequate environmental protection within a social justice / human rights focus. These and other environmental policies have influenced the content and the process of education (NEEP- GET, 2005b).

As shown above, content becomes important in the implementation of the curriculum. Curriculum can be described as the sum of all formal and informal teaching and learning opportunities. Lotz and Olivier (1998, drawing on Cornbleth 1991) argue that curriculum is a contextualised social process and that Learning Programme development in environmental education should not only be focused on content, but should also be responsive to context and arising issues'. In considering the same Learning Outcomes as those listed above in Table 2.3 in relation to *context*, the interpretations of the outcomes as shown in table 2.4 are possible. In framing these interpretations, I draw on my experience of the context that shapes learning in the Makana Public Primary School (see section 1.2).

Table 2.4 Relationship between Learning Outcomes, Assessment Standards and contextual issues

Learning Outcomes	Assessment Standards	Contextual issues
LO 1: Life Orientation Health Promotion	Participate in recycling project, and explain how recycling contributes to environmental health.	In Makana there is poor waste management. Though there are few recycling facilities learners can engage in various recycling activities.
LO 3: Natural Sciences	Conducts investigations and collects data: conducts simple tests or surveys and records observations and responses.	In Makana there is a poor management of water, and the local river is polluted. Schools also have leaking taps and toilets. In the community there is poor sanitation. Learners will have an opportunity to work in planned lessons to investigate these issues.
LO 1: Economic and Management Sciences	Needs and wants (impact on communities and environment).	In Makana we experience contextual environmental issues, such as poor sanitation, that need immediate attention to address people's needs.

Thus, in interpreting the Learning Outcomes and Assessment Standards in school-based curriculum development processes, teachers are able to consider both: content included in the NCS (R-9) (in Learning Outcomes and Assessment Standards) and the context of learning, and how this influences the learning process. This requires careful consideration of both: **content** and **context** in Learning Programmes, Work Schedules and Lesson Plans.

At the school level, participatory decision-making structures and whole-school curriculum planning provide forums for practical curriculum debate where issues of **content** and **context** can be discussed. A School Environmental Policy provides a possible forum to strengthen whole-school curriculum development because the content that the learners will be taught can be deliberated in relation to contextual priorities in the process of developing a School Environmental Policy (SEP), as the policy development process encourages the discussion of contextual issues (Eco-School Toolkit, 2005).

According to Lotz and Olivier (1998), the transformational ideals of OBE include intentions of enabling teachers to become curriculum developers. The NCS (R-9)

Overview Statement explicitly states that teachers are now required to develop their own Learning Programmes that respond to learners' context and needs (DoE, 2002a).

As described above, OBE advocates a move from a previously 'fixed', content-driven syllabi formulated by the Department of Education, to the development of more locally relevant curricula by teachers who have opportunities to select ways of teaching appropriate to particular contexts. It does this while keeping the content requirements of the curriculum in mind by allowing for educators' interpretations of the curriculum in ways that are relevant to their context. It is therefore important for educators to work with the NCS (R-9) in ways that:

- Enable development of contextually relevant Learning Programmes, Work Schedules and Lesson Plans,
- Ensure that these are based on the content and process requirements of the Learning Outcomes and Assessment Standards for a particular phase and grade, and
- Enable application of guiding Principles of the NCS (R-9) within these Learning Programmes, Work Schedules and Lesson Plans (DoE, 2002a).

As noted above, School Environmental Policies provide a broad framework within which educators can consider environmental aspects in Learning Programmes, Work Schedules and Lesson Plans that are relevant to their particular contexts. The policy process provides an outline or framework which an individual school can work with to discuss their particular priorities (as environmental issues and risks vary from school to school). This framework allows schools to audit their situation and decide on priority actions. For example:

- Schools can audit their resources used and then plan projects to reduce resource use,
- Schools can audit environmental health issues in the school and then plan projects or activities to address these,
- Schools can plan local action projects,
- Schools can develop an eco–code which is a statement of values and objectives outlining what learners are hoping to achieve, which will influence their lessons (Eco-Schools Toolkit, 2005).

These all contribute to the defining of content that is relevant to context. In addition, the framework allows schools to:

- Develop a process of monitoring and evaluating to ensure that progress is made and that any necessary changes to the action plan are formulated, and
- Inform and involve the wider community both in terms of seeking partnerships and increasing awareness of action taken (ibid). In this way the community can also contribute to the defining of knowledge and skills to be included in the curriculum.

Engaging in such processes to clarify the contextual aspects of curriculum development helps educators to 'know the learner' and to 'know the learner in context'. This is regarded as an important dimension of enabling successful learning (NEEP-GET, 2005a:33), as it enhances the process of contextualising the Learning Outcomes. This process of engaging with the curriculum is supported by the NCS (R-9) policy which explains that "... the curriculum is and will be differently interpreted, and enacted in diverse contexts" (DoE, 2002a:7). Knowing the learner in context, and considering context in relation to content is linked to an understanding of the school-in-community. To explore this further, I now discuss school community interactions.

2.2.4 School community interactions

In section 1.2 I mentioned that the contextual profile that I developed on the Makana Public Primary School indicated that there is lack of parental involvement in the school. According to Davidoff and Lazarus (2003) and the *Imbewu* programme (DoE, 1999, as cited in Lotz-Sisitka et al.2004) the importance of whole school development involving parents and community members has been highlighted in South African educational transformation discussions.

According to the DoE (2005) involvement of parents and the wider school community is important in curriculum management as school and communities need to work together to set priorities for learning actions. School Environmental Policies and management plans have the potential to initiate contextualised Lesson Planning, which can also contribute to better school management and school improvement plans (Lotz-Sisitka et *al.*, 2004). This process, when developed with parental involvement, has potential to strengthen links with the community and may also

encourage community members to become involved in school projects, as these projects work towards the improvement of schools' resource use and management (ibid.). The DoE advocates schools that encourage parents active involvement are more effective than those that do not (Imbewu, 1999). Involving parents has the potential to enable community members and parents to learn valuable skills which can be used in homes and the community. I also believe that if community members were more involved in school endeavours, they would become attached to the school, and they would not allow vandalism and theft in schools (which is currently happening) (Mvula-Jamela, 2004). Involvement of community members could also lead to sustaining the school initiatives, as the full responsibility would not only lies' with teachers (Imbewu, 1999).

There are many different ways of involving the community in school activities. For example, parents and community members can get involved in school gardening projects and in school improvement projects. Parents can also be involved in clean-up campaigns. Traditional healers can be invited to school to teach learners about cultural and medical values of plants and how to protect plants for future use. Involvement of parents can therefore strengthen contextual interpretations of the NCS (R-9).

In interpreting the Learning Outcomes, Assessment Standards and the content outlined in the NCS (R-9), teachers can therefore develop Lesson Plans that draw on community knowledge and experience to strengthen and extend learning, and "co-operative relationships can be built between the school and community" (NEEP-GET, 2004:7). In the next section, I discuss School Environmental Policies in more depth, and their potential for enabling and supporting another important dimension of OBE and the NCS (R-9), namely active learning.

2.3 SCHOOL ENVIRONMENTAL POLICIES AND ACTIVE LEARNING

2.3.1 Eco-Schools, Environmental Policy and Active learning

> The Eco-Schools programme is a Learning Programme that encourages learners to take an active role in how their schools can be managed for the benefit of the environment (Eco-Schools Toolkit, 2005).

School Environmental Policies have developed as "... open frameworks for stating intentions and Principles and managing action plans for improving schools'

environmental performances" (Le Roux, 1999:2). As indicated in the previous section, the policy development process has an open structure and encourages schools to audit existing activities and to set, evaluate and review environmental education goals and actions for many key curriculum activities (see sections 4.4, 4.5, and 4.6).

Experiences in countries such as Australia (Victorian Principals, 1997; Gough, 1992) and the United Kingdom (Baczala, 1994) indicate that there could be merit in investigating the idea of school-based environmental policy initiatives. The Eco-Schools programme supports the development of School Environmental Policies (Eco-Schools Toolkit, 2005). These policies encourage learners to be fully involved in decision-making, planning and activities and this encourages active learning. This process is an ideal implementation of Local Agenda 21 in the school community.

Schools, through participation in the Eco-Schools programme, develop the concept of putting the environment at the centre of learning in school (http://www.eco-schools.Org, 23/05/2005; Lotz-Sisitka et al., 2004). In South Africa, the Eco-Schools programme has a strong curriculum focus and participating schools develop a policy and associated Lesson Plans that enhance active learning as anticipated by the NCS (R-9). This programme also introduces active learning approaches (O'Donoghue, 2001) and contextually-situated learning. The Eco-Schools project has operated for some years in South Africa, with the intention of supporting schools to strengthen environmental learning in the curriculum (Lotz-Sisitka *et al.*, 2004). The Eco-Schools programme introduced active learning approaches (O'Donoghue, 2001) and contextually situated learning actions as defined by Conbleth (1990) in her view of curriculum as a contextualised social process. According to Lotz-Sisitka *et al.* (2004:17-18), Eco-School initiatives support change in schools through using a number of related approaches such as:

- **Whole school improvement and community links**: Schools are encouraged to work together with communities. The Eco-Schools Toolkit suggests a number of steps, the first being to establish a working group for all stakeholders to participate in the development of a School Environmental Policy.
- **Lesson planning and improved use of learning support materials**: Educators are encouraged to use learning and teaching support materials (LTSM) to develop and implement Lesson Plans with a focus on a healthy environment. This assists teachers to create opportunities for active learning.
- **Active learning and situated learning actions**: Educators are encouraged to use active approaches to learning and create learning opportunities for

learners to find out, investigate, and take action to address environmental issues in their local environment (as illustrated in Fig 2.1 below, section 2.3.2.1)

Situated learning processes allow learning to be culturally, socially and historically situated. Lotz-Sisitka et al. (2004) advocate that place and context are important in learning.

The Eco-Schools programme with its associated School Environmental Policy framework initiates active learning in many ways, and educators can implement Lesson Plans with:

- ***Information activities*** that help learners to move beyond what they already know to draw on new information about issues,
- ***Investigation activities*** that encourage local investigations of the issues that are relevant to the school community and the learners, and
- ***Action taking activities*** that encourage to learners draw up improvement plans that respond to the issues they have identified (Lotz-Sisitka et al., 2004:7).

This approach is further advocated by Rickinson, Dillon, Teamey, Morris, Choi, Sanders and Benefield (2004) who argue that students participating in their projects develop a greater 'real-life' awareness of environmental issues and also develop practical solutions towards solving them. Processes such as these enable learners to develop the insight and competence necessary for making better environmental management and life-style choices (O' Donoghue, 2001). Preparing learners to develop the competences to address environmental issues requires knowledge and skills "best developed through active learning, critical thinking, and involvement in real issues encountered in learners' immediate environments" (Lotz-Sisitka & Raven, 2001:94).

This orientation to learning is situated in culture and context as discussed in the next section. The Eco-Schools programme initiates active learning in many ways such as educators implementing Lesson Plans with activities that:

- Create scope for learners to work beyond their understanding,
- Encourage learners to investigate local issues that are relevant to their context, and
- Encourage learners to respond to the issues (NEEP-GET, 2004).

As mentioned earlier, the Eco-Schools programme has a Toolkit that encourages schools to develop School Environmental Policies and to develop a series of environmentally focused Lesson Plans that support active learning processes (Eco-

Schools Toolkit, 2005). The school can explore many resources to enhance active learning. School grounds and school food gardens are regarded as a resource for active learning (Wickenberg, Axelsson, Frtzen, Hellden and Ohman, 2004; Henderson & Tilbury, 2004), and are included as a key aspect of the School Environmental Policy (Eco-Schools Toolkit, 2005). Initiated by its support for active learning, the Eco-Schools programme also encourages the application of constructivist learning, which involves a consideration of learners' prior knowledge of particular environmental issues. This is discussed in more detail in the next section.

2.3.2. New approaches to learning in OBE

2.3.2.1 Changes in views about learning and expectations of the educator

Jansen and Christie (1999) note that South Africa has experienced extensive curriculum changes since the introduction of OBE. The Department of Education notes that these are (amongst others) aimed at developing citizens "... that are multi-skilled ... [and] sensitive to environmental issues" (DoE, 2005:2). The transformation objectives of the curriculum are founded in the values of the Constitution, and are intended to address the legacy of mental underdevelopment, authoritarianism and rote learning characteristic of Christian National Education and Bantu Education. The post-apartheid curriculum is central to building new citizenship (Nelson Mandela Foundation, 2005:81). Jansen and Christie (1999) further explain that the main core of the curriculum is constituted by a commitment to human rights, equality and social justice. In order to achieve these goals it promotes learner-centredness, active learning, problem solving, critical and creative thinking (ibid., 2005:81). These ideals, have, however not been easy to implement (ibid.).

The first version of South Africa's Outcomes Based Curriculum was critiqued for being strong on integration and weak on conceptual coherence, and recommendations were made to change the structural features of this curriculum (Review Committee, 2000, cited from Lotz and Raven 2001). These recommendations brought about a review of Curriculum 2005 (C2005) and a revised National Curriculum Statement (NCS R-9) was developed where environment, involving an active approach to learning, is a central concern (Ward, 2003). The NCS (R-9) envisages learners that are able to make informed decisions regarding community health, and emphasises the constitutional right to a healthy environment where a link is made between issues, human rights and social justice (DoE, 2003 see

section 2.2.2 above). The NCS (R-9) is also informed by changes in understanding of how people learn.

Around the 1970s, a significant transformation had taken root in mainstream ideas regarding teaching and learning around the world (WCED, 2000). Its essence was the paradigm shift from the idea that knowledge is given to passive learners, to the idea that active learners invent knowledge as they encounter and engage with it. The theoretical shift in question came to be known as "constructivism", which introduces a new role for educators and learners, and has been responsible for the shift to learner-centred education in systems around the world. Learner-centred education puts its emphasis on the way that the learner constructs his/ her own knowledge. This approach to learning implies that knowledge cannot simply be transmitted from the teacher to the learner as it is reconstructed by the learner engaged in a culture of learning at school.

The Department of Education's expectations of educators are reflected in *the Norms and Standards for Educators Policy* (DoE, 2000) and the NCS (R-9) Overview Document DoE (2002b:9). Amongst the seven roles defining the competence of an educator is the role of a 'learning mediator' in which educators are expected to:

> ... mediate learning in a manner which is sensitive to the diverse needs of learners, including those with barriers to learning ... [and] ...construct learning environments that are appropriately contextualised and inspirational. In addition an educator will demonstrate sound knowledge of subject content and various Principles, strategies and resources appropriate to teaching in a South African context (ELRC, 2003:A-47).

This document on the Norms and Standards for Education Policy released by the Education Labour Relations Council (ELRC) further indicates that the educator is expected to:

> ... reflect on how teaching in different contexts in South Africa affects teaching strategies and propose adaptations ... [and is expected to] ... analyse the strengths and weaknesses of the ways in which environment, human rights and other critical cross-field issues have been addressed (ibid.:A-49).

One of the practical roles associated with the educator's competency as mediator of learning is that of being an 'interpreter' and designer of Learning Programmes that will enhance active learning. As indicated below in section 2.3.2.2 the educator is

expected amongst other things to demonstrate the ability to design, adapt and select learning resources appropriate for the Learning Area, language, culture, and gender of learners to enhance mediation of learning (DoE, 2000:17). The educator is further expected to design Learning Programmes that meet the desired outcomes and that are appropriate for the context in which they occur in order to show practical competence (as outlined in section 2.2.3).

As indicated in section 2.2.3, Learning Outcomes and Assessment Standards provide content guidance and they guide the development of appropriate (active) learning strategies and the way that activities are structured for learners in different grades. Learning Outcomes with an environmental focus in the NCS (R-9), also promote changes in attitudes and behaviour that will help to solve existing problems relating to the environment and which avoid the generation of new ones. Palmer (1998:143) argues that the ultimate aim of environmental education is for every citizen to have formulated for him/herself a responsible attitude towards the sustainable development of Earth, an appreciation of its resources and beauty through development of an environmental ethic. She indicates that:

> ...Environmental education should provide experiences of problem-solving, decision making and participation, with considerations based on ecological, political, social, aesthetic and ethical aspects ... (*ibid.*:142).

These views on learning are congruent with the intentions of the NCS (R-9), and its constructivist underpinnings.

2.3.2.2 Active learning, constructivism and situated learning

> South Africa's new education system views learners as active participants in their own learning rather than as 'empty vessels' to be filled with information...
>
> (Lotz & Janse van Rensburg, 2000:92)

As discussed above, teachers across the Learning Areas have a demanding responsibility to mediate environmental learning in ways that promote active learning and learner participation. This learning cannot be controlled by a prescribed body of knowledge that is difficult for learners and teachers to understand. Active learning can enable teachers and learners to understand their local environment while drawing on broader knowledge resources. Thus teachers and learners need to find flexible and responsive ways of working with knowledge that 'connects' global and local perspectives.

Meaningful environmental learning can involve finding information **'about'** issues, exploring these issues through experiences **'in'** the environment, and taking action **'for'** social change (O'Donoghue, 2001). This contributes to better environmental management and better life-style choices (ibid.; NEEP-GET, 2004).

International and national research (Henderson & Tilbury, 2004; Le Roux, 1999; Lotz-Sisitka *et al.*, 2004) shows that School Environmental Policies help to contextualise learning and that they have the potential to stimulate and support active learning. In the NEEP-GET (2005), an active learning framework was widely used to assist teachers and curriculum support staff to learn about learning. This framework encourages an open approach to learning and is based on key questions:

- What do learners already know?
- What information is needed?
- What enquiries can be undertaken?
- What actions can be taken?
- How can investigations and actions be reported? (NEEP-GET, 2005a:32).

These are common-sense questions, which provide scaffolding to foster learner enquiry and problem solving (ibid.). These questions are also helpful for assessing Learning Outcomes in a way that supports developing competence and meaningful environmental learning processes in each Learning Area (O' Donoghue, 2001).

This framework (see Fig. 2.1 below) was used by teachers as guide to Lesson Planning in the NEEP-GET project, and is also used in the Eco-Schools programme. Evidence in the NEEP-GET project indicates that teachers attempted various activities to foster enquiry skills and also developed a range of different strategies to mobilise learner's prior knowledge and experience with the assistance of the framework (NEEP-GET, 2005b). This framework encourages an open approach to learning, which accords with 'learner–centred' approaches as it puts its emphasis on the way that the learner constructs and reconstructs his/ her own knowledge. This reflects a constructivist approach to learning that is recommended by theorists such as Simovska (2003), Vygotsky (1978) and Rogoff (1990). These theorists endorse the significance of learning processes which start with the mobilising of prior knowledge and experience, and which are situated in culture and context.

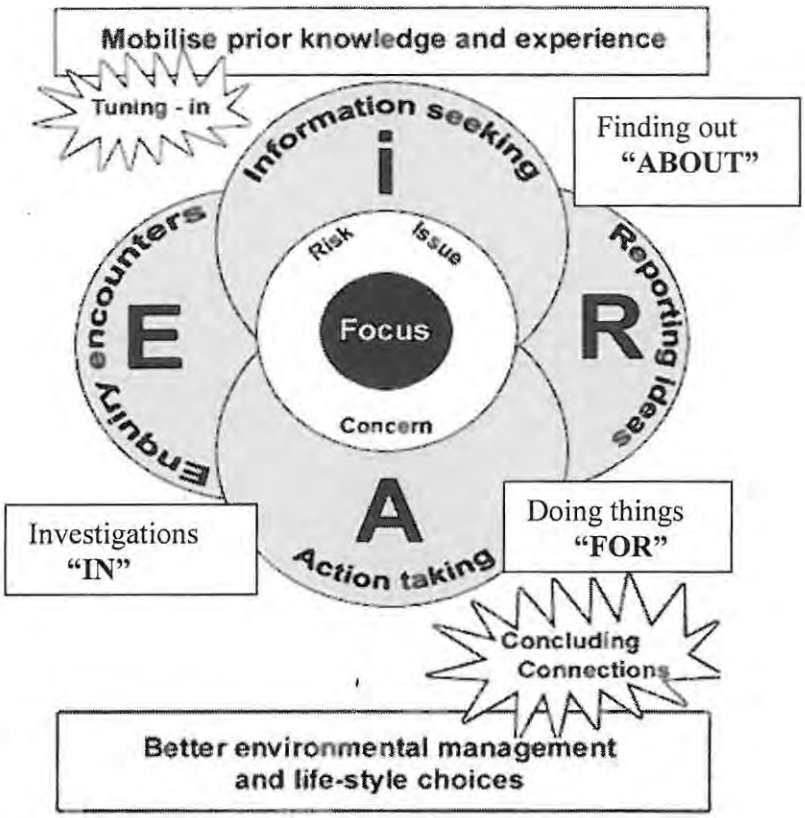


Figure 2.1 Active Learning Framework (O'Donoghue, 2001:8)

This approach to learning implies that knowledge cannot be transmitted from the teacher to the learner; it is reconstructed by the learner engaged in a culture of learning at school. Piaget (as cited in WCED, 2000) views learning as important if there is action in the learning process. On the other hand Vygotsky (ibid) emphasises the importance of culture, language and social interaction in the process of learning. Both views align themselves with the new approach to learning in South Africa as discussed in section 2.3.2.1. As mentioned above, the NCS (R-9) envisages active learning and the importance of content and context in learning. Hence the Learning Outcomes, Assessment Standards and curriculum Principles encourage the importance and use of the learners' prior knowledge. In so doing, learners will be actively involved in their learning and also share their cultural experiences with others. This new approach to learning helps the process of contextualising lessons.

According to Nduna (2003) and other South African researchers such as Jansen and Christie (1999), Janse van Rensburg and Lotz-Sisitka (2000) and NEEP-GET (2005a) the history of teaching and learning in the South African education system is

situated within a behaviourist orientation which was supported by fundamental pedagogics (the chosen theoretical framework of the apartheid education system). This theoretical framework influenced the nature of teaching and learning processes in the historically disadvantaged schools and impacted heavily on learners' experience, and teachers' practice. This resulted in the reviewing of the education system in South Africa after 1994. The introduction of OBE through C2005 represented a strong commitment to transform South African education, which included a transformation of the way in which learning was viewed. The Department of Education (DoE) started to look explicitly toward constructivism to provide the teaching and learning solutions called for by Outcomes-Based Education in South African schools (Moll, 2002; NEEP-GET, 2005a).

According to Moll (2002:5-6) the Department of Education placed constructivism at the centre of the development of teaching and learning within the Outcomes-Based Education system. This change in theoretical framework has significant implications for the role of the learner (ibid.) and the teacher (as mentioned above).

NEEP-GET (2005a:32) notes that environmental education processes in South Africa have supported social constructivism approaches to learning in which context, cultural and language-based construction of knowledge are emphasised. One of the principles of constructivist learning theories is that learning takes place in a context relevant to the learner (Mbanjwa, 2002). Constructivist approaches to environmental learning have tended to be centred on ideas of active learning that allow for the mobilization of prior knowledge (Mbanjwa, 2002; NEEP- GET, 2005a).

According to Moll (2002) social constructivism is a theory of learning. Within this framework, active learning processes are influenced by socio-cultural context. Social constructivists stress the need for collaboration amongst learners (Capel, Leask, & Tuner., 1995). This has implications for the design of active learning activities which encourage collaboration and recognise the role of the learner in the process:

> ... Constructivism assumes that knowledge is individually constructed and socially co-constructed by learners based on their interpretations of experiences in the world. Since knowledge cannot be transmitted, instruction should consist of experiences that provide interpretable experiences and facilitate knowledge construction...
>
> (http://wipaed.wiwi.tu-dresden. 24/06/2005)

Theorists such as Rogoff (1990) and Simovska (2003) who draw on Vygotsky, (1978) recommend a constructivist approach to learning. These theorists recommend approaches that will help enhance active learning processes that start with the mobilising of prior knowledge and experience. Gough (1997) argues that the learner who brings prior knowledge into the learning setting will stimulate interaction with the others and her present understanding of the world. Tobin (1990, cited in Gough 1997) views learning as an active rather than a receptive process, so that learners construct their own meanings from new information, and that they actively generate meaning from experience. This notion is further supported by Bishop and Carpenter (1991:11, cited in Janse van Rensburg and Lotz-Sisitka, 2000) when they describe constructivism as a school of thought that assumes that learning is an active process, and does not merely involve the absorption of knowledge.

The educator, when recognising the learners' prior knowledge in learning situations will hold the understanding that learners are not empty vessels, and as they come to learning experiences, they bring knowledge and experience with them (Capel et al.1995). The most important factor influencing learning is what the learner already knows, so they ascertain this and teach him / her accordingly. In the active learning processes described in 2.3.2 above, consideration of what learners already know (prior knowledge) is part of the open-ended process that allows for active learning.

Baumann *et al.* (1997) indicate that Bruner's concept of *scaffolding* describes the educator's role as being to assist the learners to formulate and discover patterns and roles which enhance expansion of prior knowledge. Vygotsky (1987, cited in Moll 2002) views language as contributing to this process of investing in the cultural capital the learner brings to the learning setting, because language is viewed as essential to informing thoughts. Learners will utilise language as a social tool in all active learning activities. This concept is further supported and explained by Simovska (2003), who, drawing on Vygotsky's notion of a 'Zone of Proximal Development' (ZPD) identified that language interaction in what she terms a 'collective Zone of Proximal Development can enhance learners' competencies (through social constructivism) as learners working collaboratively with peers. The concept of the ZPD refers to the gap between what the individual learner can do alone or without the help of the educator and what s/he can achieve with the help and instruction of the more knowledgeable 'other' (normally a teacher or parent) (ibid.:220). Simovska's research (2003) articulates the role of peers supporting each other's ability to construct new knowledge in the context of the ZPD.

Constructivist approaches to learning are further supported by other critical curriculum scholars such as Grundy (1987) and Cornbleth (1991) who present curriculum as a contextualised social process and who both emphasise the cultural, social and historical dimensions of curriculum. They are concerned about the experiences learners have with the curriculum. Cornbleth (1990) suggests that learning and teaching must be what actually occurs in the classroom. She explains that curriculum is an ongoing social process that comprises the interaction between teachers, students, knowledge and *milieu*. O'Donoghue (2001:1) articulates these challenges as being linked to "contextual social processes of cultural induction and critical reflexive re-orientation within open-ended educational processes aimed at sustaining human interactions in healthy, just and equitable environments".

Through seeking a contextually situated 'location' of active learning processes, this research aims to address and support Cornbleth's (ibid.) and Grundy's (ibid.) views that learning and teaching should be an active process and should be based on context and the cultural capital that the learner possesses. This realises Grundy's views on curriculum as praxis in which educators also reflect on their teaching experiences and learners' development in action research processes which foster teacher reflexivity (ibid.).

According to Hart (cited in Lotz-Sisitka, 2004/5) learning involves three things: socially situatedness, meaning making and the growth of identity. Rogoff's (1990) work shows that through close interactions in the adult community children come to learn by experience/doing. Hart notes that intentionality in the process is important and that teachers should focus on learners' social context in order to address curriculum needs. Hart further notes that there is and action binary' in environmental learning in which thinking and action are intertwined and situated in social context. These perspectives introduce important implications for the role of the teacher, and for understanding learning.

Rogoff (1990) extends the concept of ZPD by emphasising the interrelatedness of the roles of children and adults. Active participation by learners in their own learning and development is significant. Learners must be functioning in the social context (Rogoff, 1990) in order to be making their contributions and this is how they develop insights, critical thinking and competence. Building on Vygotsky's work, Rogoff (1995) suggests that the process of learning and development should draw attention

to how personal efforts, interpersonal relationships and culturally structured activities constitute each other in a learning process. She further speaks of *appropriation*, which is a process that occurs in the context of engagement, where learners along with others engage in socio-cultural activity (Simovska, 2005). Her work supports the view that the socio-cultural perspective-puts forward the "...importance of interpersonal relationships in facilitating active student participation in teaching and learning processes" (ibid.).

These perspectives indicate that the process of learning involves knowledge, construction, and knowledge is interpreted as a social process of knowledge construction rather than an object for learners to internalise. Meaning and knowing are dynamically created and recreated through participation in socially organised activities. An important aspect of learning is peer collaboration within the class, in the school grounds and the community, as Rogoff (1995) explains that peer cooperation is beneficial to learning.

Engaging active learning processes in context furthermore requires a consideration of situated learning approaches which also foster curriculum as praxis orientations. Lave (1993) argues that "... learning as it normally occurs is a function of the activity, context and culture in which it occurs (i.e., it is **situated)**."
(Jonassen,1994).

Jonassen (1994) defines situated learning as occurring when students work on authentic and realistic tasks that reflect the real world. The knowledge content is determined by its real world counterpart and context. Jonassen (1994) further explains that situated learning is concerned with how learning occurs everyday (Jonassen,1994).

The situated approach to learning provides an opportunity for educators to create active learning environments in which learners are able to become involved in addressing and responding to environmental issues and risks (Lotz-Sisitka & Raven, 2001). Lotz-Sisitka and Raven (2001) noted that in schools who provided an active learning environment, learners were able to find out about issues, to examine these issues and to take critical action for a better environment. O'Donoghue (2001) attests that situated learning involves a consideration of what learners already know as part of the process, and it enables the individual and group to develop new insights and

competences. These competencies are encouraged through the use of active approaches to learning.

In situated learning it is important to clarify the environmental focus in the Learning Areas, Learning Outcomes and local context (as illustrated in table 2.3). This process has its own challenges such as supporting school stakeholders to make informed choices about their responses to the issues confronting them. Learners should understand why they are doing activities, as this increases the scope of meaningful learning (NEEP-GET, 2005b). When learners are involved in actions of investigating and solving environmental issues, they should participate with the prospect of betterment of the environment. According to Jensen and Schnack (1997) educators should look for projects that can develop action competence of learners rather than creating concern and disempowering them.

This accords with Vygotsky's (1987) point that inter-subjectivity (meaning making) as the basis for communication encourages the extension of learners understanding of new information and further activities. Students further internalise or appropriate the social process as it is carried out in joint problem solving. If learners participate 'genuinely' in an activity, they develop the capacity to encourage processes of collective learning, which in turn is beneficial to the individual student as individual initiative, commitment, and critical thinking are fostered (Simovska, 2003, see chapters 4, 5 & 6 for insight into how these ideas on learning were actualised in this research).

2.4 IMPLICATIONS FOR LESSON PLANNING

The DoE requests educators to "...Interpret official policy and design programmes of learning appropriate for your particular learners and context" (DoE, 2002a:16). In the light of this teachers appear to have a responsibility for designing situated Learning Programmes that are informed by the Learning Outcomes and Assessment Standards and which are based on the contexts of learners. Lesson Planning should be based on the Learning Outcomes and Assessment Standards provided in the curriculum policy, to ensure high knowledge and high skills for all (NEEP-GET, 2004), while also mobilising prior knowledge and skills of learners. The curriculum Principles encourage teachers to develop active Lesson Plans that are Outcomes-Based, bringing out the Principles and allowing all learners access to high levels of knowledge and skills. The use of learning and teaching support material (LTSM) such

as the Eco-School Toolkit, allows for School Environmental Policies to inform Lesson Plans that emphasise context. NEEP-GET (2004) provides an overview of how to approach Lesson Planning for a healthy environment and it recommends that:

- Links are made between Learning Outcomes and Assessment Standards,
- The environmental focus is brought out in the different Learning Areas,
- The Principles of the curriculum are embedded in Lesson Planning,
- Assessment is integrated into the Lesson Plans,
- Meaningful integration is ensured in and between the Learning Areas,
- Teachers think about learning when planning lessons,
- Teachers consider context,
- Teachers mobilise indigenous knowledge in an African social context,
- Teachers apply different teaching methods, and
- Teachers use LSTM in the leaning process.

Rickinson *et al.* (2004) argue that Lesson Plans that focus on context have the potential to encourage students to develop positive relationships between themselves, their teachers and the wider community through participating in active learning projects such as school ground improvements. These authors (ibid.) report that there is evidence that such projects result in more positive parental participation in their children's learning. Lesson Planning in the NCS (R-9), informed by Learning Outcomes and Assessment Standards also encourages educators to work together to develop Lesson Plans that would provide an opportunity for learners to develop competences in all Learning Outcomes. This increases opportunities for development of a wide range of skills (Eco-Schools Toolkit, 2005).

Having argued for constructivist approaches to learning, and the incorporation of contextual approaches in Lesson Plans, it is important to note that there are many challenges facing educators in our schools. Educators lack skills for planning and the organisation of learners' work (Lotz-Sisitka & Raven, 2001; NEEP-GET, 2005; Jansen & Christie, 1999; Janse van Rensburg & Lotz-Sisitka, 2000). According to Sotashe and Bethela (pers. comm., August 26, 2005) a lack of skills and support from the First Education Specialist (FES) of the DoE and also inappropriate training of educators results in poor implementation of the curriculum. Both pointed out insufficient knowledge on the implementation of the OBE curriculum. Sotashe also viewed educators as "OBE phobic" (ibid). In my observation educators are reluctant

to shift from behaviourist to constructivist approaches to learning, which requires planning ways of engaging learners actively in the learning process.

According to the DoE (2004:50) assessment is a process of identifying, gathering and interpreting information about a learner's achievement, as measured against nationally agreed Learning Outcomes and Assessment Standards for a particular grade. This means assessment is an ongoing, everyday process to establish what a learner knows and understands, can do, is like, and values.

> In outcomes-based education assessment is used to monitor progress. It focuses on each learner being able to reach his/her full potential. Assessment is seen a developmental instead of judgmental, and teachers and learners work together to improve performance
>
> (NEEP-GET, 2004:29; DoE, 2004:50).

Planning for assessment is therefore an integral part of Lesson Planning. Lesson Planning and assessment planning should be based on the Leaning Outcomes and Assessment Standards provided in the curriculum policy (DoE, 2002b). In order to assess appropriately, the assessment methods should be consistent with the Learning Outcomes and Assessment Standards. To progress, learners need to demonstrate the ongoing development of skills, knowledge and values described in the Learning Outcomes. The Assessment Standards provide an indication of minimum levels of achievement (DoE, 2002a). When teachers plan lessons they are expected to take into consideration what is envisaged by the policy document regarding assessment of the learner (see figures 4.1- 4.3), and to provide for a variety of assessment activities in the context of a lesson plan (DoE, 2002a).

According to the DoE (2004:57) learners are empowered when taking part in the assessment process because it teaches them to take responsibility for their own learning and to take pride in their work. The main purpose of assessing learners should be to "enhance individual growth and development, to monitor the progress of learners and to facilitate their learning" (DoE, 2002a:23). The assessment process therefore has potential to further strengthen contextual relevance and active learning in the curriculum.

Such assessment, however, is not only curriculum-centred and teacher-directed. A longer-term approach to environmental learning is to develop in learners the values, attitudes, concerns, commitments and actions needed to protect and improve the

environment (Environmental Learning in Namibia, n.d.). "Assessing whether such qualitative changes are taking place needs to involve learners reflecting critically on their attitudes and behaviour and their ability to take personal and group decisions" (ibid.: 42) in relation to environmental issues. Enabling learners to take part in practical activities gives them opportunity to think about their own personal achievements and experiences.

Assessment results also have the potential to provide feedback on the decisions made in the School Environmental Policy. Lesson Planning, active learning and assessment activities can provide feedback on the School Environmental Policy and its intentions, as they represent curriculum-based implementation of the School Environmental Policy intentions. It should be noted here that, although assessment policy in South Africa has these ambitions goals for enhancing learning, it is also recognised that this assessment system is ignored and poorly implemented due to its complexity (Review committee, 2000; Lotz-Sisitka & Raven, 2001; NEEP-GET 2005)

2.5 CONCLUSION

This chapter presented an overview of the broader context in which this action research case study of the development of the School Environmental Policy and active learning processes took place. It included discussions on active learning and new approaches to learning in OBE, which were further contextualised through a review of the environmental focus in South Africa's new OBE curriculum – the NCS (R-9). The chapter reviewed how environmental learning is conceptualised in the NCS (R-9). It also considered the theories that underpin learning in the NCS, notably constructivism, with particular reference to social constructivism. It considered active learning approaches and situated learning approaches, and how these relate to constructivism and contextualised approaches to curriculum, as proposed in the NCS (R-9). The chapter then considered this theoretical framework and its implications for Lesson Planning, providing the background necessary to interpret the action research processes that took place in the study and subsequent findings (see Chapter 4, 5 and 6).

This chapter provides the background to the research that I undertook in one school in Grahamstown in the Eastern Cape, where I participated in and observed three lessons of three different educators (one of whom was myself). The school

established a School Environmental Policy through a participatory process, and the two teachers and I subsequently planned and implemented active learning lessons, to implement aspects of our School Envirpnmental Policy.

In the next chapter I describe the research processes and methodological characteristics of this study and show how the study was designed and implemented.

CHAPTER 3

RESEARCH DESIGN DECISIONS

3.1 INTRODUCTION

This chapter outlines the research design decisions, methodology and methods employed to generate data. It accounts for the decisions that shaped the final design and conduct of this study. As described in chapter 1, the research question is "How can development of a School Environment Policy contribute to active learning in the context of the NCS (R-9)?" The research will focus on active learning as this resonates within the Principles of the NCS (R-9), the Learning Outcomes and Assessment Standards (as outlined in chapter 2), and strengthens learning in the South African context (O'Donoghue, 2001).

Durheim (1993:33) advocates that in developing a research design, the researcher makes serious decisions along four dimensions. These include:

- The purpose of the research (see chapters 1and 2)
- The theoretical paradigm informing the research (see chapter 3)
- The context or situation within which the research is carried out (see chapter 2 & 4), and
- Research techniques employed to collect and analyse data (see chapter 3).

3.2 METHODOLOGY AND METHODS

This research is conducted as a participatory action research case study as it aims to contribute towards social change in the locality (Carr & Kemmis, 1986). Two educators from the Intermediate and Senior Phase were involved in the planning session together with myself, who undertook to teach lessons in the Foundation Phase. I implemented the process in the Foundation Phase because educators from this phase stated clearly that they were not able to be part of the research hence I taught the Grade 2 lessons (I have previously taught in this phase, and often teach lessons when the Foundation Phase teachers are not present). I did this because the research required me to be amongst the participants, and I wanted to cover lessons in each of the phases. Therefore I worked with two educators in the implementation phase.

This case study is developed to explore and understand the particularity and complexity of a single case (Stake, 1995; Bassey, 1999). Case studies provide descriptive, rich information about a specific situation and allow room for new ideas to emerge from data.

Yin (2003) states that case study research involves direct observation of events, and normally involves interviews with the persons involved in the events. These are two of the methods that were used to generate data for this study (see section 3.4 below). Participatory action research has three characteristics: shared ownership of the research project (which I negotiated, see appendix 1), community based analysis, and processes that contribute to community action. The last characteristic is the main focus of my research, with the hope that it will contribute to actions in my school that link to community issues and the curriculum change process (McNiff, Lomax & Whitehead, 1996). Action research describes and explains events while seeking to change them for the better (Bassey, 1994). Kemmis and McTaggart (1992) note that action research is motivated by a quest to improve and understand the world by changing it.

Bassey (1994:40) describes case study as "... an empirical enquiry conducted within a localised boundary of space and time, focusing on data collection". Educational case studies generate knowledge based on observation and are mostly quantitative. Educational case study involves "... enquiry into aspects of educational activities in context to inform decisions of practitioners or policy makers" (Bassey1994: 58). In my case I was a participant observer in the development of the School Environmental Policy, as well as the planning and implementation of lessons with an active learning focus.

Stake (1995:85) supports Yin's statement that "... case studies are undertaken to make the case understandable" and indicates that a single case "... is not a strong base of generalisation but forms a new opportunity to modify old generalisations". As mentioned above, I focused on a single case study informed by my purpose of gathering information that will enable me to understand how the School Environmental Policy can contribute to active learning, and in doing this I participated in and observed three different lessons in three different Learning Areas and three different phases in one school.

Schmuck (1997) notes that action research is characterised by the Lewinian notion of self-reflexive spiral cycles of planning, acting, observing and reflecting. Carr and Kermmi, (1986:184) add that these are not linear cycles but are "interrelated with each phase informing the action to be taken in the next phase". This participatory action research case study involved two cycles, both of which were undertaken in Makana Public Primary School. Each cycle comprised three interwoven phases of planning, action and reflection (Lotz, 1996). Figure 3.1 below represents the different activities and research processes in the context of the different cycles of enquiry.

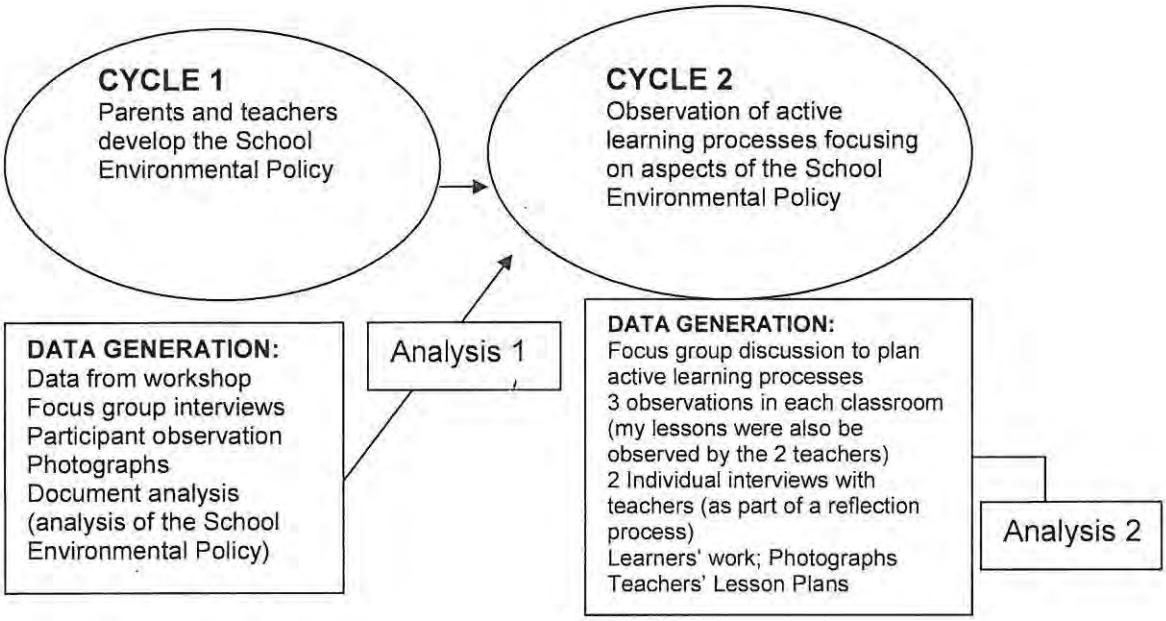


Figure 3.1 Cycles of enquiry

In line with the theoretical framework of this particular study (see chapter 2), I needed to utilise research processes that are grounded in democratic values and provide space for participatory research processes that allow for learning and reflection. Looking at the socio-political shifts in democracy and social change in South Africa (Lotz, 1996:37) and the development of participatory, people-centred approaches to environmental issues, I believed participatory action research to be a fitting methodology for this study. It also portrays values entrenched in the South African Constitution (RSA, 1996).

Hart (1993) notes that activist forms of research (including action research) cannot be other than participatory research, requiring collaborative enquiry as a means of

educational reconstruction. Kemmis (1993, cited in Bryant, 1996) views action research as a form of research carried out by practitioners into their own practices, and as a participatory form of educational research for educational improvement. Lotz (1996) further notes that Kemmis (1982) views action research as a process, and that it should not be seen as a recipe for bringing about democracy, but rather as an embodiment of democratic principles in research.

The action research process in this study is described in detail in chapter 4.

3.4 DATA GENERATION

In the participatory research process described above, I used the following techniques for data collection:

- Focus group discussions,
- Participant observation, and
- Document analysis.

I discuss each of the techniques briefly, to provide insight into how the techniques were used to generate data in the context of the study.

3.4.1 Focus Group Discussions

Walford (1991) advocates that interview data in many social science studies are treated as prime data. In my case I employed two focus group discussions. In cycle 1 (during a workshop) I aimed to establish how educators and parents view the School Environmental Policy development process and what they see as important active learning priorities in the school and community (FGD-1). Appointed scribes in each group recorded data from these focus group discussions. Their different experiences and their discussions provided rich information on the questions used (see appendix 1). In cycle 2, I had one focus group discussion with the participating teachers to inform the planning of active learning processes (FGD-2, see appendix 2).

The use of focus group discussions as a research technique, to my mind, encourages free talking and constructive exchange of opinions, ideas or issues between groups of parents and educators. According to Nyamathi and Schuler (1990, cited in Asafo-Adjei, 2004) focus group discussion is a qualitative research

method for gathering information which, when performed in a permissive, non-threatening group environment, allows investigation of a multitude of perceptions on a defined area of interest.

3.4.2 Participation observation

In this research I used a journal to note down all the observations I made during the participatory process. I described all deliberations as Patton (1990) notes that the description from observations should be factual, accurate and thorough. He (ibid.) further argues that the most fundamental distinction that differentiates observational strategies is the extent to which the observer would be a participant in the setting being observed. In cycle 1 and cycle 2 of the action research process, I was a 'full participant'. In cycle 1 I observed how the school environment policy was formulated while contributing to its development. My observations were guided by an observation schedule (see appendix 3). In cycle 2 (working with the 2 teachers) I developed an observation schedule (see appendix 4) based on the active learning framework developed by O'Donoghue (2001) and used by the NEEP-GET (2005) (see section 2.3.2.2). This schedule guided observations of the active learning processes in the school grounds and in the classroom. As mentioned earlier, I also taught one of the lessons, and had to observe my own lessons. I also asked the other two teachers to assist me with the observations of my lessons (see appendix 4).

In the research process I was thus a participant observer, and I negotiated access with the School Governing Body (SGB), headmaster and educators. I planned with parents and educators in a workshop situation (see appendix 5).

Jorgensen (1989:12) states that participant observation is appropriate for exploratory studies aimed at theoretical interpretations. Jorgensen (ibid.: 82) further explains that observation begins the moment the participant observer makes contact with a potential setting to become familiar with the inside world for a focused data collection activity.

My epistemological stance and the theoretical perspectives of constructivism in the context of OBE (see section 2.2.3) shaped the research observations. In this study observation and collection of documentary evidence (e.g. learners' work and teachers' lesson plans) were my main research methods. Hopkins (1993:77)

indicates that observations in educational research play a crucial role not only in classroom research, but also in supporting professional growth of teachers.

3.4.3 Document analysis

I also used document analysis as a data collection strategy. Patton (2001) observes that documents provide valuable sources of evidence in research, not only because of what can be learned directly from them but because they also stimulate a path of enquiry. Document analysis consisted of a review of different documents that assisted me to address the research question. These included:

- **School Environmental Policy meeting minutes and School Environmental Policy:** During the process of developing the School Environmental Policy, minutes were taken (see appendix 6). These minutes have played an important role in capturing the feeling of parents and teachers with regards to the formation of the environmental committee, and the establishment and launching of the School Environmental Policy (see appendix 7 a) and how these can inform active learning. I also analysed the School Environmental Policy once it was developed (see appendix 7b) (see chapter's 4 and 5).

- **Teacher Lesson Plans:** During cycle 2 of the inquiry I analysed teacher Lesson Plans that were developed (including my own Lesson Plans) in relation to the NCS (R-9) requirements for environmental learning, and the active learning framework as proposed by NEEP-GET (2005) (see sections 2.3.2.2 and 4.3).

- **Learners' work:** I also made use of learners' work to determine what environmental learning activities took place, what outcomes were achieved, and what they reflect about active learning (see appendices 8a, 8b, 8c 8d & 8e and figures 4.8, 4.9, 4.10, 4.18, 4.20, 4.27, 4.28, 4.30, 4.31 and 4.32).

- **Photographs:** I used photographs to document actions and to provide evidence of the research processes (McNiff et al., 1996). I also used the photographs as a way of documenting the active learning process (see figure 3.1 below for an example, and chapter 4 for further use of the photographs). McNiff et al. (1996) note further that photographs can show the quality of children's engagement in their activity.

Figure 3.1 Learners engaged in the activities

3.4.4 Interviews

During the second cycle I used individual semi-structured interviews to generate data with two educators after lesson implementation as part of our reflection process. Lotz (1996) notes that semi-structured interviews allow for both's responding to predetermined questions and free responses.

The interviews were very easy to arrange. I discovered that educators who were participants were eager to engage in open discussions at this stage. I was involved in the interview reflections. Cohen, Manion and Morrison (2000) explain that an interview allows great depth and it was my intention to engage in a detailed interview discussion to get information on how the teachers experienced the active learning activities, and how they saw the links between the active learning processes and the School Environmental Policy. Interviews enabled me to probe for explanations and clarity where I felt there was a need. I wrote down information on a prepared interview schedule and used this to guide the interviews (see appendix 9).

Figure 3.2 Face to face interview with both educators

3.5 DATA ANALYSIS

In this study data was sorted according to the different stages of the action research cycles that happened over time, and took into consideration the different sites and activities that took place.

McNiff *et al.* (1996:96) note that " ... data emerges as result of monitoring the action research cycles and this data emerges as records of plans, actions and steps taken to reflect upon and evaluate how these were created". They caution that managing these records is part of the requirements to be systematic in your research.

The data from the focus group discussions as well as the School Environmental Policy workshop minutes and the School Environmental Policy itself were analysed to guide the activities in cycle 2 (see section 4.2.3). In cycle 2 the different data sources were triangulated to ensure validity and to enhance the thick description of what occurred in the lessons and active learning processes (see section 4.3).

Data analysis was negotiated with the research participants and in particular with the two educators who took part in the second cycle, although I took responsibility for the final analysis of the data.

Glaser and Strauss (1967) suggest a method in qualitative analysis that uses an analytic procedure of constant comparison. I made use of a coding procedure to code raw data generated. All the raw material generated from the cycles of enquiry was colour coded during the first phase of analysis (see appendix 10). The use of constant comparison enabled me to identify themes and sub-categories (see Table 3.1 below).

The four analytic categories initially used in the data analysis include:

- School Environmental Policy and active learning,
- Lesson planning,
- How lessons were presented to create opportunities for active learning (observations, learners' work), and
- Teachers' reflections on lessons taught and the School Environmental Policy development processes.

Analytic memos are documents written by the researcher in order to systematise his or her thoughts in cycles of action research. Elliot (1981, cited in McKernan 1996) suggests that analytic memo contains ones' systematic thinking about the evidence one has collected and should be produced periodically. They serve to take stock of important issues and are written up as reminders to oneself to investigate some particular issue. Memos are important in that they force the researcher to read and reflect at frequent and periodic intervals in the research project.

On the other hand Bassey (1999) views case study work as usually producing a great deal of raw data, and useful way of handling and trying to make sense of the data is analysis which seeks to condense them into meaningful statements. These analytic statements need to firmly base on raw data, and may suggest the need for more specific data to be collected.

"As a first stage, analytic statements need to be generated, which give concise answers to the research question" (Bassey, 1999:70). Analytic statements always need to be tested against the data (Bassey:71). They are of course, initially in the form of hypothesis.

3.6 TRUSTWORTHY

In the context of this research I use data and methodological triangulation by using multiple techniques such as interviews, document analysis, and focus group discussion as discussed in section 3.4 above (Arksey & Knight, 1999). Arksey and Knight, (1999) further note that the use of different instruments for data gathering in research helps to validate the findings through a process of triangulation. This method was also used to ensure the rigour and trustworthiness of data and interpretation.

Using different data sources, I managed to get rich data and was able to provide substantial descriptions of findings (Maxwell 1996:95), ensuring a thick description of the research.

Self-reflexivity is central to participatory research (Lather, 1986). Through the process of reflexivity I reflected critically on my role in the action research process. I also provided the focus group participants and interviewees (my co-researchers) with feedback to ensure face validity (Lather, 1991). In this way it was very easy to verify what was discussed during focus groups and interviews by going back to the

respondents. I also used detailed description to describe what transpired in the cycles in my journal.

3.7 ETHICS AND TRUSTWORTHY

McNiff *et al.* (1996) advise that when one is doing participatory action research one must have a good grasp of ethical issues. They (ibid) support the notion of considering the following ethical dimensions in action research:

- Negotiate access, I wrote letter to the school stakeholders.
- Ensure confidentiality of identity and data, I explained to the participants that their names would never be revealed.
- Respect participants' right to withdraw from research, I also explain to them that if they felt uncomfortable they were welcome to withdraw.
- Keep others informed; I explained that each and every step of the way they would be on pare of the process.
- Maintain intellectual property rights,
- Keep good faith. Explained that the research process depended on them therefore I would keep good faith with them.

I have drawn on these guidelines as a way of addressing process and objectives, clarifying roles and making certain that participating teachers understood the nature of the study (Cohen et al., 2000). At the beginning of the research and throughout the research process, participants were able to provide comments, extend and correct data summarised from their interviews (focus group discussions and semi- structured interviews).

Lotz (1999) notes that a view of the world as a "complex interaction of reflexive subjects" needs to be placed "at the centre of our efforts to conduct research in schools with educators". She further argues that group life must not only be understood by focusing only on the awareness of actors, but must be understood in terms of its embeddedness within social, political and historical context.

I realised that to work with educators and parents I had to be conscious of exposing and responding to issues associated with unequal power relations in the study. I have attempted to be democratic and transparent by keeping all participants informed of everything that was happening in the process of the research. Relationships of trust and mutual understanding built on the Principles of respect for persons, honesty and justice need to be nurtured and sustained if the research is to be meaningful and socially transformative (Lotz, 1996). From time to time I gave report back to the participants and verified with them.

Research ethics have also been considered in a more comprehensive manner by considering respect for persons, respect for truth and respect for democratic values (Bassey, 1999).

3.8 CONCLUDING SUMMARY

In this chapter, I have presented an outline of the research design decisions that informed the research process. I have given a summary of the diverse research methods used to generate the requisite data to be able to answer the research question and I have also explained the reasons for choosing a participatory action research case study (Lather; 1986, Carr and Kemmis, 1986, Kemmis and Mc Taggart, 1992). I described how I analysed the raw data. From the process of data coding, I developed data categories and associated sub-categories. This study is informed by my interest to understand active learning in the context of NCS (R-9). The need to provide substantial reflections about active learning was also an underlying Principle for choosing the case study approach.

In the following chapter, I share the main findings of the study through a detailed description of the research process. These findings reflect the contribution of the School Environmental Policy to the active learning processes in the curriculum.

CHAPTER 4

CYCLES OF ENQUIRY: POLICY DEVELOPMENT AND ACTIVE LEARNING

4.1 INTRODUCTION

In this chapter I describe the two cycles of the participatory action research process, examining the development of the School Environmental Policy and associated active learning processes in the context of the revised National Curriculum Statement (R-9). The first cycle of enquiry is based on a process of planning, action and reflection (see section 4.2). The second cycle is informed by the findings of the first cycle (see section 4.3), and is based on the same process of planning, action and reflection. As suggested by Cohen et al. (2000:28) action research uses feedback from the data in an "ongoing cycling process", as described in section 3.2.

The first cycle of inquiry considers the development of the School Environmental Policy with an intention to inform active learning processes in Makana Public Primary School. The second cycle of inquiry considers the planning and implementation of Lesson Plans with an active learning focus, in three grades and three different Learning Areas.

4.2 CYCLE 1: THE POLICY DEVELOPMENT PROCESS

4.2.1 Planning the policy development process

When the research started, the school had an existing environmental committee. The main function of the committee is to address concerns regarding social and environmental issues such as poverty, HIV/AIDS related problems, learners with learning disabilities, school greening, food security and such issues.

Informed by the contextual profile which I developed for the school (Mvula-Jamela, 2004), I realised that the school and the entire community is faced with issues and risks that need immediate attention (see section 1.2). Through a deliberation on the contextual issues I convinced staff members that it would be wise to include parents in our committee to address a key issue identified in the contextual profile which found that "... there is a lack of parental involvement ..." (Mvula-Jamela, 2004:17).

The first environment committee meeting which included parents as part of the committee was held on 8th March 2005 (see appendix 11). Interested parents attended and 2 women and 1 man who is a non-teaching staff member of the school were democratically elected to join the existing committee. As indicated in chapter 1 (see section 1.3) I am elected as the coordinator of the committee, and we discussed developing a School Environmental Policy. I also explained the research process that I was involved in and the potential role of the committee in the research processes.

We also discussed the need for including a focus on environment in the curriculum, and discussed how the environmental focus in each Learning Area helps with environmental activities in the school. We discussed how a focus on environmental concerns can help us understand the Learning Outcomes and how addressing environmental concerns may have the potential to enhance active learning. The meeting agreed that we move forward and join the Eco-Schools programme. We also agreed to develop a programme of action and it was decided that the next meeting would be on 13th May 2005. The business of the day would be to develop a School Environmental Policy.

4.2.2 Developing the School Environmental Policy

The meeting of 13th May 2005 took place in the staffroom as a workshop. Commissions were formed (parents and educators divided into 3 groups). Each commission consisted of 3 educators and 3 parents (see figure 4.1 below). Questions for facilitation were prepared in English, so educators played a big role in interpreting for parents when necessary. All participants deliberated in the commissions but educators were a little dominant, as they were more knowledgeable than the parents, but everything was done in consultation with each stakeholder. Educators explained to parents what they meant in the commissions, and asked for parents' responses and suggestions.

Picture 4.1 Commissions during the workshop

Each commission was given 2 questions to answer and one member of the group reported back on behalf of the group. The questions were as follows:

- When you see the word **active learning** what comes to your mind?
- How can we design the School Environmental Policy such that it assists in promoting an **active learning** approach?

The meeting agreed that we elect a scribe to record all the deliberations of the day (see figure 4.2 below).

Picture 4.2 Scribe taking notes during the workshop

Many ideas emerged from the report back of every group. These are summarised in table 4.1 below.

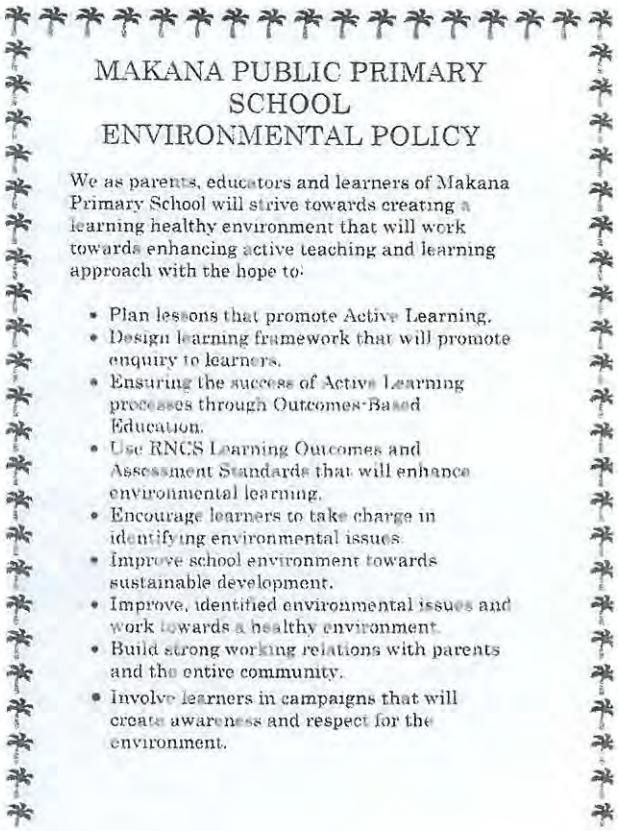
Table 4.1 Summary of responses from the four commissions

Group 1	Group 2	Group 3	Group 4
Q1: Active learning involves learners working practically, solving problems. Q2: The School Environmental Policy should link with the curriculum (environmental focus).	Q1: Active learning involves learners working together. Q2: The School Environmental Policy should improve teaching and learning and should expose learners – they should interact with each other.	Q1: Active learning is when the teacher acts as a scaffolder of learning. Q2: The School Environmental Policy should encourage learners to find solutions, and teachers should plan together.	Q1: Active learning involves learners helping one another and involving learners in context. Q2: The School Environmental Policy should contribute to better management of the environment.

Parents made limited contributions because they were not well versed with issues of active learning but they were keen that their children should benefit from it. All the participants reached consensus before reporting back. As chairperson of the committee, I facilitated the workshop (see figure 4.1 right). I moved around the groups, and also assisted with the development of the School Environmental Policy that we subsequently used to inform the planning and implementing of lessons based on an active learning approach (see section 2.3).

The School Environmental Policy included objectives to work towards the improvement of the school environment, as well as objectives to guide the teaching and learning process. It also included objectives for strengthening school-community relationships, and for strengthening learner participation. The Eco-School Tool kit (2005) suggests various 'areas' which schools can develop as part of their school environmental policy for example: cultural activities, action projects, resource -use improving environmental information. We did not use this framework to guide our School Environmental Policy development process, as we were quite concerned to ensure a strong focus on active learning and on the implementation of the NCS and the Learning Outcomes, *as well as* environmental objectives. As can be seen in the School Environmental Policy statement below (see Figure 4.3), the environmental objectives have been catered for in the policy, even though we did not use the Eco-Schools Framework directly.

The School Environmental Policy was based on a synthesis of the group reports.



MAKANA PUBLIC PRIMARY SCHOOL
ENVIRONMENTAL POLICY

We as parents, educators and learners of Makana Primary School will strive towards creating a learning healthy environment that will work towards enhancing active teaching and learning approach with the hope to:

- Plan lessons that promote Active Learning.
- Design learning framework that will promote enquiry to learners.
- Ensuring the success of Active Learning processes through Outcomes-Based Education.
- Use RNCS Learning Outcomes and Assessment Standards that will enhance environmental learning.
- Encourage learners to take charge in identifying environmental issues.
- Improve school environment towards sustainable development.
- Improve, identified environmental issues and work towards a healthy environment.
- Build strong working relations with parents and the entire community.
- Involve learners in campaigns that will create awareness and respect for the environment.

Figure 4.3 School Environmental Policy

The policy was developed in order to assist the teaching and learning process and identify opportunities for active learning within the curriculum. After we were all satisfied about what was essential for the school to improve its practice the policy was written down (see figure 4.3 above). The policy is explicit on what the school community envisaged from educators, learners, parents and the community at large.

With the support provided by the guidelines in the Eco-Schools' programme (Eco-Schools Toolkit, 2005), the policy was completed. The Eco-Schools Toolkit (2005) encourages educators to implement the requirements of the Revised National Curriculum Statement (NCS (R-9) in the classroom context. We discussed the Eco-Schools programme and how it can help educators to reflect on their praxis because it requires educators to use active learning approaches, and to develop Lesson Plans with an active learning focus (developing Lesson Plans is one of the requirements of NCS). The policy was read aloud to all participants and it was agreed that it represented all the discussions and also addresses the needs of the school.

The participants all agreed that the policy should be typed and made available to all educators to file in their portfolio files and also that it should be displayed on all notice boards in every classroom, in the staffroom and the office (administration). We all agreed that the policy would be launched and various members of the broader school

community would be invited. From time to time the committee would evaluate the operation of the policy, and its influence on Lesson Planning and teaching and learning.

4.2.3 Reflections on the policy development process

After the development of the School Environmental Policy, I held a focus group discussion with those that participated in the process. The focus group discussion indicated that teachers and parents were enthusiastic about the process and wanted the process of active learning to take place in the school. One of the teachers claimed, "... this process is going to benefit the learner as they will be central to learning". The other teacher indicated that the process would contribute to curriculum transformation in her statement that "... this is similar to implementation of the NCS (R-9)".

We reflected on the content of the School Environmental Policy and we discussed its potential to provide a possible framework for contextualising the curriculum with giving attention to local environmental issues. We also commented on the potential of the School Environmental Policy to create an opportunity for collaborative curriculum development work in our school. We discussed the way that the School Environmental Policy would help us to start organising our environmental education activities by interpreting and implementing the curriculum, particularly those Learning Outcomes with an environmental focus. We also noted the importance of ensuring community links when implementing the policy.

We reflected that implementing the School Environmental Policy could help the learners, the teachers and the community to manage the school's resources wisely and it could help the school to make specific plans for actions in future. This will also help to make curriculum implementation changes. We also reflected that the School Environmental Policy could help learners develop greater 'real life' awareness of environmental issues and that it could help learners develop practical solutions towards solving local environmental issues once they had identified them.

After the School Environmental Policy was developed, and through these reflections, we were stimulated by the prospect of putting the School Environmental Policy into practice. Since the School Environmental Policy deals with preparing learners for the future, the planning of lessons became a logical next step. Before planning our

lessons we noted that we needed to include the following aspects in our lessons (based on the School Environmental Policy and our reflections):

- Lesson Plans should focus on the Learning Outcomes with an environmental focus,
- Lesson Plans should implement the NCS and its requirements (i.e. they should be outcomes-based, should ensure high skills and high knowledge, and should focus on achieving a healthy environment),
- Lesson Plans should involve learners in identifying environmental issues, and should also involve community members where possible, and
- Lesson Plans should include opportunities for the learners to be active, and to identify and solve problems in the locality.

4.3 CYCLE 2: THE ACTIVE LEARNING PROCESSES

4.3.1 Planning the lessons

Initially I thought the lessons would be taught at the senior phase. This assumption was based on the fact that the Senior Phase has not yet implemented the NCS (R-9), and I thought that this process would benefit learners and will equip educators to be proactive in their practice. In discussions, we decided that if all 3 phases (foundation, intermediate and senior) could be part of the process of implementing the School Environmental Policy through Lesson Planning, it might have a greater impact in the school.

We gathered together as three educators from three different phases. The main focus of the process was to develop Lesson Plans that have a focus on environmental learning, which also enables active learning and acknowledgement of learners' prior knowledge (see section 2.4), and which address the objectives of the School Environmental Policy as outlined in section 4.2.2. above.

We agreed to make use of the Eco–Schools Lesson Plan template because it provides clear direction as to what is expected from educators in order to address the curriculum planning requirements (see figures 4.4, 4.5 and 4.6 below). The template is the same as the one used by the NEEP-GET (NEEP-GET, 2004) and it covers all the requirements for Lesson Plans as outlined by the NCS (ibid.). We started by

identifying possible topics that will allow for active learning, and that will also enable learners to investigate and improve the state of environment in their context. We all agreed that lessons should be taken from three different Learning Areas to illustrate and implement integration of learning activities. Numeracy was chosen as focus in the Foundation Phase (Grade 2); Arts and Culture was chosen as the focus in the Intermediate Phase (Grade 5) and Life Orientation was chosen as the focus in the Senior Phase (Grade 8). This enabled us to consider aspects of the requirements of the NCS (R-9).

We took the NCS (R-9) policy document and identified Learning Outcomes that are appropriate for engaging with environmental concerns relevant to our school community in each of the selected Learning Areas. We identified waste management and environmental health of the community as two key issues, and we thought that we should use the school garden for activities with the younger learners. We considered how learners would benefit from the Learning Outcomes that we identified. We made use of the Eco-Schools framework and resources to identify Learning Outcomes that were relevant to the topics we had identified. We further integrated Leaning Outcomes within and across the Learning Areas by drawing on other Learning Outcomes from other Learning Areas. We reviewed the chosen Leaning Outcomes to ensure that they would strengthen and support environmental learning in response to the challenges identified, and the requirements of our School Environmental Policy. Through this careful selection of Learning Outcomes, we were paving a way for active learning to take place.

In the process, the content of the learning was linked to the context of learning (see section 2.2.3). We all agreed that after teaching the lessons we would have focus group discussions to reflect on how the Learning Outcomes have been achieved or not by learners, in order to create a space for improvement. We further agreed that we will all teach and if one of us were teaching, the other two would observe and after teaching I, as the lead researcher, would conduct semi-structured interviews separately with educators (see section 3.4.4).

Active learning was the priority of the planning session. Learning activities were designed in such a way that learners would practically be doing things. The actions included social interaction (through group activities) and individual contributions to action activities. There were also opportunities for peer-to-peer interaction, learner and educator interactions, and learners and environmental interactions.

Figures 4.4, 4.5 and 4.6 below show the Lesson Plans developed, using the template adapted from NEEP–GET (2004) and Eco-Schools (Eco-Schools Toolkit, 2005). As mentioned above, this template is the one recommended by the Department of Education in their training.

<table>
<tr><td colspan="2">INTERMEDIATE PHASE LESSON PLAN</td></tr>
<tr><td colspan="2">Lesson on: Waste management
Duration: 2 week (7 days)
Date: 23 August 2005
Grade: 5</td></tr>
<tr><td>LEARNING OUTCOMES (LO)

Arts & Culture - LO1: The learner will be able to create, interpret and present work in each of the art forms</td><td>ASSESSMENT STANDARDS/ INTEGRATION
Natural Science - LO 1: Plan investigation -helps to clarify questions for investigation and conduct investigations.
Arts & Culture - LO3: Participate and collaborate
Life Orientation - AS 2: Investigate local environmental health problem using different data sources, an plan a strategy to address the problem
Technology - LO1, AS 1: Design and make
Languages LO1, 2 and 3:
1. Learner will be able to listen for information and enjoyment, and respond appropriately and critically in a wide range of situations.
2. The learner will be able to speak confidently and effectively in spoken languages in a wide range of situations.
3. The learner will be able to read and view for information and enjoyment, and respond critically to the aesthetic, cultural and emotional values in text.</td></tr>
<tr><td>LINKS WITH PREVIOUS LESSONS
Water management</td><td>LINKS WITH NEXT LESSONS
Paper making out of paper wastage</td></tr>
<tr><td>CORE KNOWLEDGE
Environmental health
Rights and responsibilities</td><td>CONTEXT
School grounds (Makana School)
Classroom
School hall</td></tr>
<tr><td colspan="2">LEARNING ACTIVITIES AND ASSESSMENT
Activity 1: Teacher ask learners questions regarding kinds of waste they see at school and home
Activity 2: Learners use and fill in the prepared audit sheet (Go around the school to discover different waste). Using a black bag learners collect waste and then classify the different waste collected.
Activity 3: In class, in their groups, analyse the waste and fill in audit sheet (see appendix 12) and investigate ways on how they can help to manage and reduce waste.
Activity 4: As a class they design and make a structured animal in their context with the help of an expert person who makes wire constructions, organised by the educator.
Activity 5: From the collected waste paper learners make pulp.
Activity 6: Fill in the pulp into the structured animal and also make paper from the recycled pulp.</td></tr>
<tr><td>FORMS OF ASSESSMENT:
• Educator observations
• Group
• Individual
• Peer</td><td>RESOURCES:
Wires, paper, black bags, water glue, powdered paint, pliers, audit sheets, basin</td></tr>
</table>

EXPANDED OPPORTUNITIES: Club formation to monitor healthy environment	TEACHER REFLECTIONS:
CRITICAL AND DEVELOPMENTAL OUTCOMES: **CO1**: Identify and solve problems in which responses display decisions, using critical and creative thinking. **CO2:** Work effectively with others as member of the team, group, organisation, and community. **CO4:** Collect, analyse, organise and critically evaluate information. **DO8:** Reflect on and explore a variety of strategies to learn more effectively. **DO9**: Participate as responsible citizen in the lives of local, national, global communities.	

Figure 4.4 Lesson Plan, Grade 5

FOUNDATION PHASE LESSON PLAN	
Lesson on: Numeracy (learning to grow) school grounds **Grade:** 2 **Duration:** 1 week (4 days) **Date:** 23 June 2005	
LEARNING OUTCOMES **Mathematics - LO1**: The learner will be able to recognise describe and represent numbers and their relationship, count, estimate, calculate and check with competence and confidence in solving problems. **Mathematics - LO4**: The learner will be able to use appropriate measuring units, instruments and formulae in a variety of contexts.	**ASSESSMENT STANDARDS/ INTEGRATION** **Mathematics - LO1, AS 2:** participating and collaborating involving addition of whole numbers with at least 2 digits. **Mathematics - LO4, AS 8:** Can perform calculations, using appropriate symbols to solve problems. **Life Orientation - LO1, AS2:** Explore and report on links between a healthy environment and personal links.
LINKS WITH PREVIOUS LESSONS Numbers and their relationships Healthy food	**LINKS WITH NEXT LESSONS** Measure volume of liquids Water management (dripping tap measurement)
CORE KNOWLEDGE Numbers, operation and relationships, measurement and counting	**CONTEXT** School food garden, classroom
LEARNING ACTIVITIES AND ASSESSMENT **Activity 1:** Teacher asks learners to identify the vegetables she brings to class and learners identify their colours. Ask about the use of the butternut in learner's home (*iselwa*- calabash). Ask where do we get vegetables? Show learners the seeds of both beans and pumpkin. **Activity 2:** In groups learners are given seeds to count (do work sheet 1, count seeds differently and add them together). **Activity 3:** Learners discuss in groups, which seeds, and how many seeds they are going to plant. **Activity 4:** Divide learners into groups, learners measure the length and width of the vegetable plots using pacing by foot, string and measuring tape (write answers on worksheet 2). **Activity 5:** Plant the seedlings in their respective vegetable plots. **Activity 6:** Using a 5 litre bucket learners count and calculate volume of compost to be added into their vegetable plots (write down answers in the worksheet)	
FORMS OF ASSESSMENTS: • Educator assessing operations • Group activity assessing co-operation	**RESOURCES:** Worksheets, posters, beans and pumpkin seeds, lead pencils, strings, measuring tapes, buckets, crayons, compost and (*iselwa*) calabash. Assessment sheets. Prior knowledge.

EXPANDED OPPORTUNITIES:	TEACHER REFLECTIONS:
Caring for beans planted in class. Observing bean germination development.	Teacher writes learner's responses into the journal.
CRITICAL AND DEVELOPMENTAL OUTCOMES: **CO2:** Work effectively with others as member of a team, group and community **CO5:** Communicate effectively using visual, mathematical & language skills in the modes of oral/ or written presentation.	

Figure 4.5 Lesson Plan, Grade 2

SENIOR PHASE LESSON PLAN	
Lesson on: Investigating a local health problem **Grade:** 8 **Duration:** 3 weeks (15 days) **Date:** 18 June 2005	
LEARNING OUTCOMES **Life Orientation - LO1**: The learner will be able to make informed decisions regarding personal, community and environment.	**ASSESSMENT STANDARDS/ INTEGRATION** **Life Orientation LO1, AS 2:** Investigating a local environmental health problem using different data sources and plans strategy to address the problem. **Natural Science LO1 AS:** plans investigation as part of the group. **Arts and Culture LO 3 AS: 3** participate and collaborate. **Technology LO1; AS 1** Design & make. **Language LO3, LO2 AS 2,** **Mathematics LO1** Data handling
LINKS WITH PREVIOUS LESSONS: Waste management	**LINKS WITH NEXT LESSONS** Monitoring process of a dumping site in Makana
CORE KNOWLEDGE Health risks (human & environmental) Rights and responsibilities	**CONTEXT** Classroom, School grounds and community dumping site
LEARNING ACTIVITIES AND ASSESSMENT **Activity 1:** Learners brainstorm using a mind map on how they think of different waste around the school, home community and school food garden. List on the prepared worksheet. **Activity 2:** Learners in groups read a story from a book regarding dumping site of a particular area. [Life Orientation Grade 5 text book, pg. 12]. **Activity 3:** Using the prepared audit sheet to sort the waste into renewable and non- renewable. Using a bar graph plot the information. **Activity 4:** Learners work in pairs investigating a dumpsite problem by answering the guiding questions. Design a poster to make the community aware of littering the environment. **Activity 5:** Visit a local dumping site and answer worksheet. **Activity 6:** Learners think and design ways of solving the problems and report back in groups. **Activity 7:** Tabulate ways of interacting with the community in order to combat dumping in the area. **Activity 8:** The school is going to host another school as a class to find ways of fundraising from the useful waste and make articles to be sold at the school.	
FORMS OF ASSESSMENT: • Educator observation • Group activity assessing cooperation • Peer • Individual	**RESOURCES:** Pens, paper, text books, plastic bags, garden tools

EXPANDED OPPORTUNITIES: To link with community to embark on campaigns that will lead to eradication of dumping.	TEACHER REFLECTIONS:
CRITICAL AND DEVELOPMENTAL OUTCOMES: **CO1**: Identify and solve problems and make decisions, using critical and creative thinking. **CO2:** Work effectively with others as member of the team, group, organisation, community **CO3:** Organise and manage oneself and ones' activities responsibly and effectively **CO4:** Collect, analyse, organise and critically evaluate information. **DO9**: Participate as responsible citizen in the lives of local, national, global community. **D12**: Develop entrepreneurial activities..	

Figure 4.6 Lesson Plan, Grade 8

As indicated above, the Lesson Plans were used by teachers to implement active learning processes that were relevant to the Learning Outcomes in the NCS (R-9). We all planned for the integration with other Learning Areas, and planned the learning activities, Assessment Standards and assessment tools to monitor the achievement of the intended outcomes. We hoped that these would provide insight into how active learning is taking place. These Lesson Plans indicate the link between Learning Outcomes, Assessment Standards, content, context, forms of assessment, and the Critical and Developmental Outcomes. The Lesson Plans also indicate how learning is to be contextualised through topics which enable learners to work actively towards achieving the Learning Outcomes as outlined in the NCS (R-9).

4.3.2 Teaching the lessons

4.3.2.1 Orientation and overview

As described in section 3.4.2, I, and other two educators decided to draw up an observation schedule to guide the data gathering during the lesson observations. I designed an observation schedule and then gave copies to the other two educators for their comments and input. We further subsequently discussed, refined and finalised the observation schedule (see appendix 13) and this was used to document all lessons in the research process.

The observation schedules were used by the other two educators and myself during each lesson implementation. We agreed that I would use a reflective journal for each lesson in addition to the observation schedules (see section 3.4.2, appendix 14).

4.3.2.2 Brief description of each lesson process

As the active learning process was a key area of interest in this study, I now discuss the lessons in some detail. I firstly provide a brief overview of each of the lessons (section 4.3.2.2) and then discuss the way that teachers used different teaching methods to foster active learning (section 4.3.2.3). Following this, I analyse learner participation in each of the Lesson Plans (section 4.3.2.4), and then discuss the evidence of learning (section 4.3.2.5).

Lesson 1

This Intermediate Phase lesson was on "Waste management" and was aimed at reducing and ultimately combating waste in our school as indicated in our School Environmental Policy. For this lesson the teacher used learners' prior knowledge to check their understanding of the topic. To do this, she introduced the lesson by asking leading questions. She prepared an audit sheet (see appendix 12) for learners to use around the school and look for different kinds of waste. She also explained that the audit sheet would help learners to understand the different types of waste.

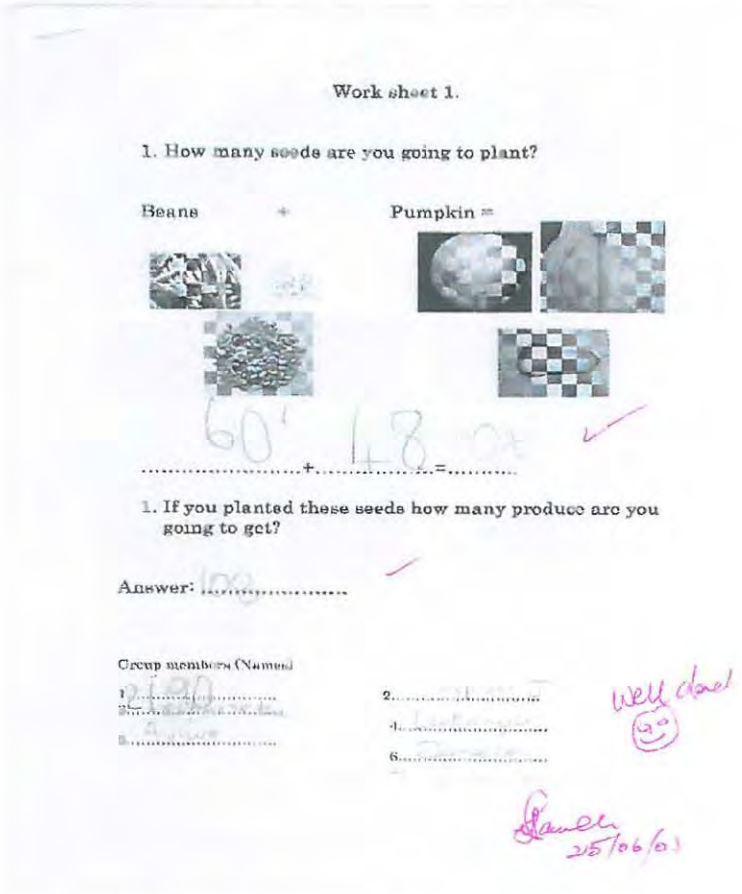
Learners were asked to analyse their findings in the audit sheet and they discussed ways of helping to manage and reduce waste in the school. Learners were organised in groups and were asked to design a 'structured animal' from the waste they collected. From group report backs, learners voted to use an elephant structure as their class project but at the end we found it difficult to make and the cow structure was the one we resorted to. They used the waste paper collected to fill in the wired structure once they had built it.

The class was also involved in a recycling project and made recycled paper out of the waste paper, and they also decided to make end of year trophies with the 2-litre plastic bottles they collected (see figure 4.7 below).

Figure 4.7 Trophies made from waste by learners

Lesson 2

The Foundation Phase Lesson Plan was a Numeracy Lesson Plan adapted from the 'Learning to Grow' resources (Sisitka, 2001). This is the lesson that I taught. I firstly mobilised learners' prior knowledge and experience by asking a question regarding the vegetables I brought to class and their use at home. I showed learners the seeds of both pumpkin and beans. Learners in groups counted the seeds and used a worksheet to write their answers (see figure 4.8 below).



Work sheet 1.

1. How many seeds are you going to plant?

Beans + Pumpkin =

.....+.....=.....

1. If you planted these seeds how many produce are you going to get?

Answer: .....

Group members (Names)

1..... 2.....

3..... 4.....

5..... 6.....

Well done

25/06/01

Figure 4.8 Activity worksheet on 'counting seeds'

The groups were given an opportunity to count the seeds they decided to plant. They were asked to estimate the anticipated crop. Learners were again divided into groups and performed a series of activities in the school food garden. They started by using worksheet 3 (see appendix 15) and measured the length and the width of the garden using different techniques such as:

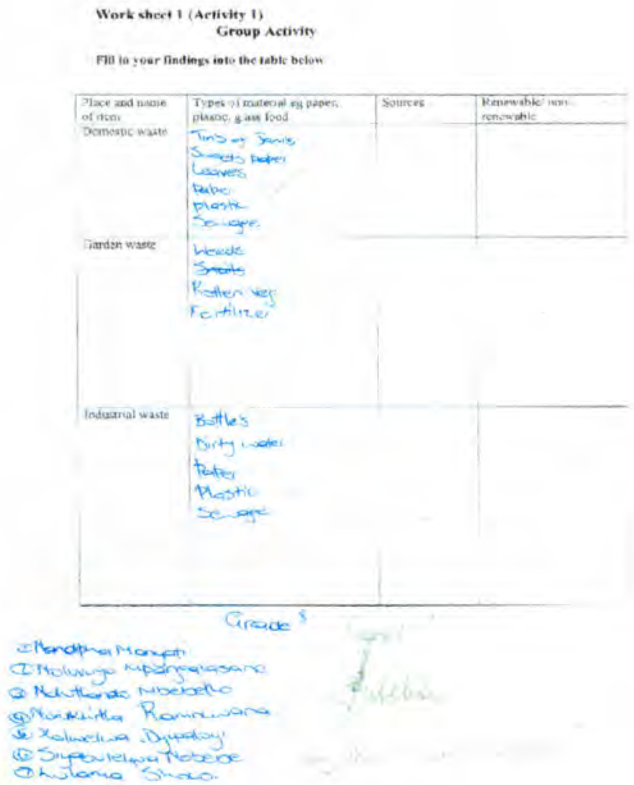
- Pacing by foot,
- Using string, and
- Using a measuring tape.

They then planted the seeds they counted in their groups in various plots in the school food garden. Lastly they worked on worksheet 4 (see appendix 16) using 5 litre buckets, and they counted the buckets of compost they added into their plots.

Lesson 3

The Senior Phase Lesson Plan was centred on investigating a local health problem. Learners started with a brainstorming exercise. Using a mind map technique, they were asked to represent what they know about different waste issues and types around the school, home community and school food garden. They did this with the aid of a table prepared by the teacher.

The teacher adapted a story from a Grade 5 Life Orientation text book (see appendix 17). Learners read about a certain area which experienced a problematic dumping site. Learners were asked to use a prepared audit sheet to sort waste into different categories in the school grounds. After filling in the worksheet, learners plotted their findings from the audit sheet into a bar graph.



Work sheet 1 (Activity 1)
Group Activity

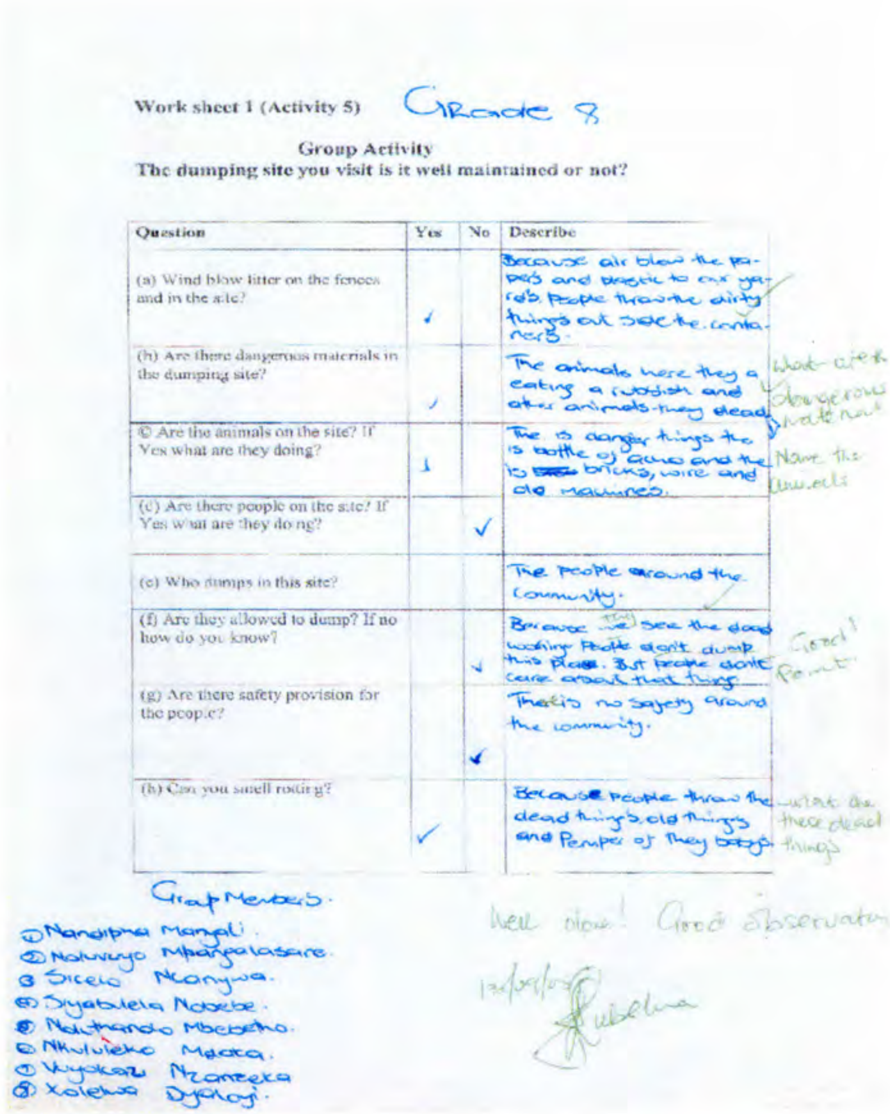
Fill in your findings into the table below

Place and name of item	Types of material eg paper, plastic, glass food	Sources	Renewable/ non-renewable
Domestic waste	Tins or Jars Sweets paper Leaves Paper plastic Sewage		
Garden waste	Weeds Sticks Rotten veg Fertilizer		
Industrial waste	Bottles Dirty water Paper Plastic Sewage		

Grade

Figure 4.9 Activity worksheet on renewable and non- renewable waste prepared by the teacher

In pairs learners investigated the dumping site problems and answered the guiding questions provided by the educator. As a class they also designed a poster to raise awareness on littering of the environment in the community (see figure 4.17 and appendix 18). The educator and learners visited the local dumping site and the educator provided learners with a worksheet (see figure 4.10 below) as a guiding framework for their observations. They filled the worksheet in while working in groups. Learners conducted interviews with nearby residents asking questions regarding littering and dumping in the area.



Work sheet 1 (Activity 5) Grade 8

Group Activity

The dumping site you visit is it well maintained or not?

Question	Yes	No	Describe
(a) Wind blow litter on the fences and in the site?	✓		Because air blow the papers and plastic to our yards. People throw the dirty things out side the containers.
(b) Are there dangerous materials in the dumping site?	✓		The animals here they a eating a rubbish and other animals they dead (What are dangerous materials?)
© Are the animals on the site? If Yes what are they doing?	✓		The is danger things the is bottle of glass and the is bricks, wire and old machines. (Name the animals)
(d) Are there people on the site? If Yes what are they doing?		✓	
(e) Who dumps in this site?			The people around the community.
(f) Are they allowed to dump? If no how do you know?		✓	Because they see the dead working People don't dump this place. But people don't care about that thing. (Good point)
(g) Are there safety provision for the people?		✓	There is no safety around the community.
(h) Can you smell rotting?	✓		Because people throw the dead things, old things and Pamper of they baby. (What are these dead things)

Group Members.

1. Nandipha Mangali.
2. Nokuvuyo Mpanpalasane.
3. Siceia Nkonywa.
4. Siyabulela Nobebe.
5. Nolithando Mbebetho.
6. Nkululeko Mdaka.
7. Vuyokazi Nzanzeka
8. Xolelwa Dyaloyi.

Well done! Good observation

Figure 4.10 Activity worksheet 5 on the dumpsite visit

Back in class, learners in groups were given an opportunity to think about and design ways of solving the problem and report back in groups (in the form of an action plan). They also tabulated and motivated ways of interacting with the community in order to combat dumping in the area.

Finally, learners devised ways of fundraising through the waste collected and wanted to contribute when the school was going to host another school. They decided on making different things out of waste such as:

- Plastic bags,
- Plastic mats,

- Recycled paper,
- Fruit bowls with fruit made out of paper, and
- Trophies and motorcars out of 2-litre plastic bottles.

4.3.2.3 Teaching methods

- Different educators used different teaching methods in the different lessons, and these varied from group work, use of concrete objects, field trips and use of learning support materials (see appendices19a, 19b and 19c). This created a diversity of learning opportunities and a rich potential for meaning making (see section 2.3.2.2), as well as different opportunities for learners to work towards achievement of the intended Learning Outcomes of different lessons as described in the Assessment Standards and outlined in the Lesson Plans (see section 4.3.1 above). We all introduced the lesson in a similar way, by mobilising the learners' prior knowledge in order to introduce new knowledge. Teaching methods used in each lesson are discussed in more detail below.

- **Lesson 1**

The lesson's intended outcomes on "waste management" were predetermined. It was expected (as indicated in the Assessment Standards for Arts and Culture) that at the end of the lesson the learners should be able to create, interpret and present work in at least one of the art forms (see table 4.4).

To start the lesson the teacher asked the learners questions regarding kinds of waste they see at school and home. The teacher re-arranged the groups and handed over an audit sheet to 5 groups, and asked the learners to take a tour around the school and look for different types of waste. The groups collected waste in the black bags and sat on the lawn, they then counted the waste and recorded their findings on the audit sheet (see figure 4.11 below).

Figure 4.11 Learners collecting waste

Learners went back to their groups in class, and the teacher asked them to analyse the audit sheet and investigate ways of how they could help the school to manage and reduce waste. The teacher observed that learners had a problem with vocabulary; she explained the words such as *'renewable', 'non-renewable, 'pollution', 'dumping', 'waste', 'recycle'* and their meanings as a form of feedback. The teacher went around the groups assisting learners to understand the tasks and cope with the new vocabulary and terminology (see figure 4.12 below). The teacher provided a clear instruction for learners to read a story and find answers, in pairs, using the guiding questions she provided.

Figure 4.12 Educator explaining new vocabulary to one of the groups

The educator scaffolded learning by creating an opportunity for learners to be engaged in a dialogue using English and isiXhosa in their groups. The teacher asked questions such as "How could you raise awareness in the school and community, to stop throwing waste anywhere?" These questions encouraged learners to discuss

and reach consensus before stating their groups' suggestions on helping to manage and reduce waste. Groups completed the task at different times.

In another activity learners were asked to think about and design an animal that was familiar to them. They used their technology background to do this activity. The teacher explained that the animal they designed would be filled with paper pulp. The teacher scaffolded learning by moving from group to group and asked leading questions. An expert (Mr Loyiso) was invited to help learners to make the structure of an elephant using wire. The expert saw the learner's design of the elephant, and he used the wire and showed learners the pattern. In the process learners took turns to make up the structure of an animal. Learners were interested and worked co-operatively with Mr Loyiso.

The lesson was planned with integration in mind. The teacher used skills from different Learning Areas such as Language and Communication. The two main Learning Areas addressed in the lesson were Arts and Culture and Technology. Outcomes from these Learning Areas were most evident in the lesson activities.

Figure 4.13 Learners drawing a mind map, to map ways of influencing the school to undertake a recycling project

- **Lesson 2**

The Lesson was based on Mathematics Learning Outcome 1. The intention was that learners would be able to recognise, describe and present numbers and their relationship and count, estimate and check with competence and confidence in solving problems (as required by the Assessment Standard). Mathematics Learning Outcome 4 which focuses on measurement was also an important Learning Outcome guiding this lesson.

At the initial stage of the lesson I asked learners questions about the pumpkin and beans such as: "What are these, can you classify them under vegetables or fruit?" This enabled learners to demonstrate their prior knowledge associated with seeds, vegetables and fruit.

I noted that learners were not familiar with the English word for both pumpkin and beans. I wrote these names on the board and explained them in *isiXhosa* and English. I asked learners to identify the colour of pumpkin and beans and what they are used for in their homes. Learners responded that the pumpkin is used as *iselwa* (calabash), it is used to store sour milk. I passed the calabash I brought to class around for learners to touch, and to provide a new experience for those who had never seen a calabash.

In another activity I showed learners seeds of both vegetables (pumpkin and beans) and checked if learners recognised any relationship with the vegetables. They recognised the sugar beans and butter beans, but not the pumpkin seeds. I then explained to learners that this was the pumpkin seed and further explained that if you plant these in the garden you will harvest pumpkins after a while. I created an opportunity for learners to touch the different kinds of pumpkin seeds for instance blue pumpkin, white pumpkin and butternut.

In another activity the group leaders were asked to come to me and take the seeds of pumpkin and beans to their respective group. I handed over a worksheet (see figure 4.14 below, appendix 20) for learners to record how many seeds they have. Learners counted seeds separately and recorded their answer on the worksheet (see figure 4.14 below).

Figure 4.14 Learners recording their seeds

I then asked learners to estimate how many plants they expected if they planted the number of seeds they had in their groups and I asked them to record their estimation on the same worksheet.

Figure 4.15 Learners counting seeds

In another activity, I instructed learners to colour in pictures of the vegetables and below each vegetable write down their names (see section 4.27 below). Most of the learners remembered the colour of the vegetables but they were less sure of the names and I reminded them to look for the spelling of the words on the board.

The photographs below show learners engaged in activities in the school food garden. I used the groups in class and gave each group a plot. Learners were asked to complete worksheet 3 (see appendix 15). I explained to them how to measure the plots. I did this by showing them how to pace foot measurements and explained that they have to record their answers on the worksheet. They were then given string to use and were again asked to measure and recorded their findings. Lastly they used the measuring tape. I experimented with learners on how to measure using the measuring tape and further explained to them that they should record their answers. In these activities the groups were helped by mentors from grade 5. Learners worked co-operatively and asked questions of each other and the educator.

Figure 4.16 Learners measuring the garden plots

Learners were then asked to count the volume of compost needed in their plots, using a 5 -itre bucket. Each time they could pour the compost on their vegetable plot. I explained to learners that 1 bucket equals 5 litres. I also explained that they should write 1 for each bucket of compost poured, but they could also count this as 5. As they counted they wrote down in the worksheet and at the end they counted the number of buckets 1 (5), 2 (10) litres of compost heap. The activity created an opportunity for learners to interact with relatively complex calculations, while they competed to add more compost in their plots.

Finally, I showed learners how to dig a hole and how to plant the seeds and then learners individually planted the seeds (see figure 4.17 below) in their plots in the garden. I asked learners to bring water using watering cans. I showed them how to water the garden, for instance you are not supposed to only water the place where you planted, but the whole plot. Learners took turns to water the garden and I wrapped up the lesson by telling learners the importance of regular watering and taking care of vegetables in the garden. They then washed their hands and went back to class to finish up the worksheets.

Figure 4.17 Learners planting their plots

I encouraged learners to work in groups and help one another. There was a sound relationship between learners and myself. It was not possible for the lesson to be fully conducted in English, as few of the learners speak English fluently I used code switching, changing from isiXhosa to English, in order to assist the learning process.

The lesson was also planned with integration in mind. Learning Outcomes from the following Learning Areas were addressed: Life Orientation, Numeracy, Arts and Culture and Languages 1 and 2 (isiXhosa and English).

- **Lesson 3**

The lesson on "investigating a local health problem" was based on the expectations from Life Orientation Learning Outcome 1 (Health Promotion), which expects learners to be able to make informed decisions regarding personal, community and environmental health. The teacher did not specifically consider the associated assessment standard requirements for this Learning Outcome for grade 8, but used the same Assessment standard as the Intermediate Phase teacher. (see figures 4.4 4.5 above)

At the beginning of the lesson the educator organised learners into pre-arranged groups to brainstorm what they think of different waste around the school, home, community and school food garden and record their brainstorming on a mind map. They filled in activity 1 of the prepared worksheet (see figure 4.9 above). The teacher mobilised learners' prior knowledge and experience by scaffolding groups as she moved around. The teacher engaged learners in a discussion on 'who is responsible for waste problems', after they indicated that it is not correct to litter. She pointed out that we are all responsible for littering, and challenged them about their own behaviour when it comes to littering, as this had not come out in their mind maps.

The educator gave learners a text to read in groups. The text was from grade 5 Life Orientation book (see appendix 17). This text was about a certain area which experienced a dumping problem and how a particular school helped to stop dumping in the area.

The teacher referred learners to the school waste audit sheet that was used by the grade 5 learners in the story (see figure 4.29 below). They were given the audit sheet to complete after classifying waste found in the school. The teacher then asked leading questions such as: Which is the most and the least waste, compare the waste that is most produced and the least used in school, and who is using the waste?

Learners were then instructed to plot the information on a bar graph. After they had done that the educator asked them to analyse the graph and report back their analysis. The educator instructed learners in pairs to investigate a dumping site problem from the book by answering the guiding questions.

They were then asked to decide as groups to design a poster that would raise awareness in the community on littering of the environment. Groups produced different types of posters that were beautifully presented (see figure 4.17 below).

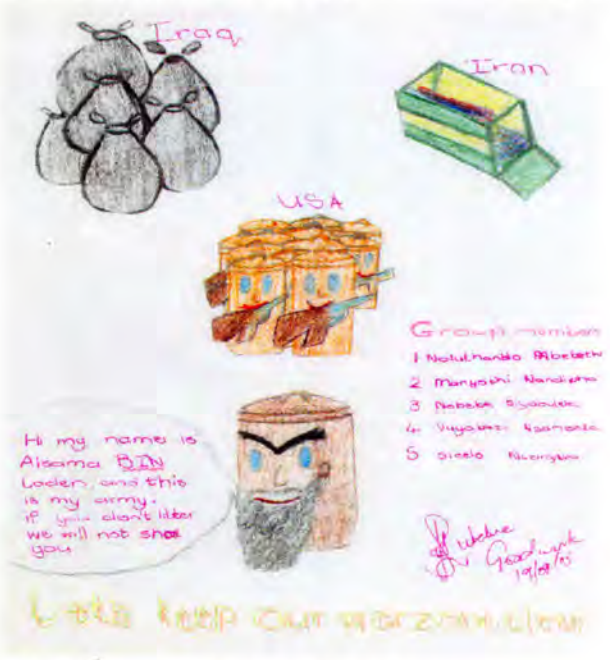


Figure 4.18 One of the posters designed by groups

In another activity the teacher took learners to visit an area near the school. The community uses this area as a dumping area. The educator asked learners to answer the prepared worksheet (see below) in groups. (See figure 4.10 above, and figure 4.19 below).

Figure 4.19 Learners answering prepared worksheet about the dumpsite

When they arrived on the site the teacher asked learners to look at the dumping site and voice their feelings about the area in writing. They were allowed to use their creativity and they wrote poems. Many worrying feelings and concerns emerged in this process (as seen in these poems below in figure's 4.20).

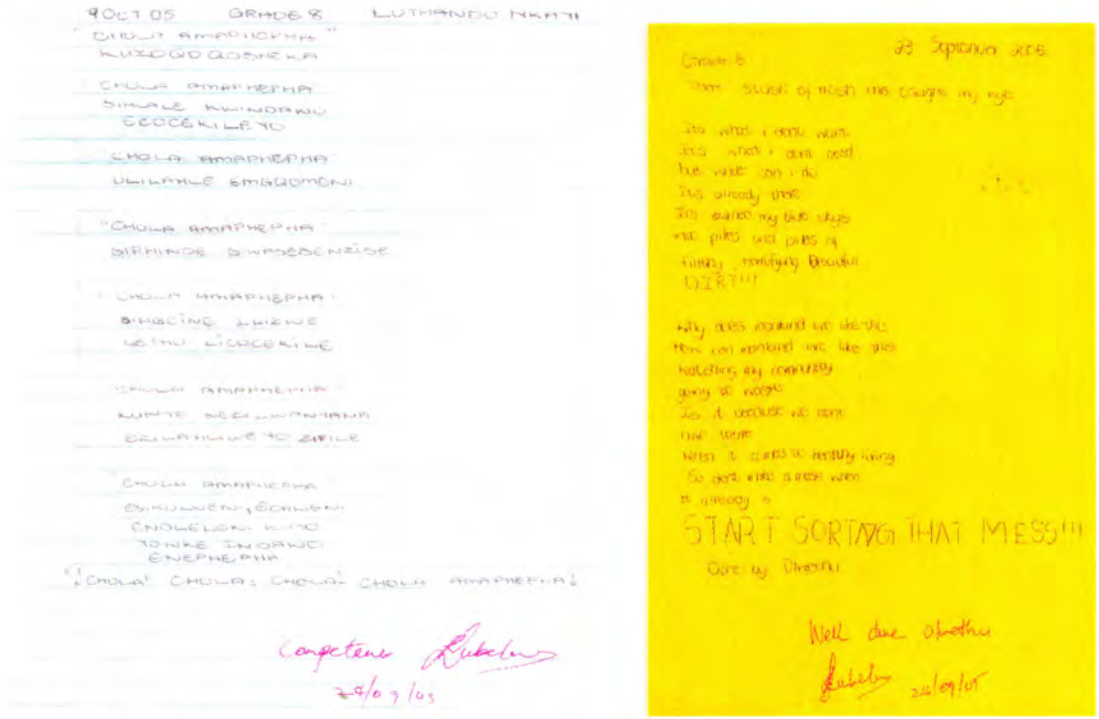


Figure 4.20 Poems by learners

The educator provided careful instructions on how to use a pre-designed questionnaire, so that they could interview different people in the community. The educator asked different groups to interview different people according to gender, age, Makana municipality workers and business people.

Figure 4.21 Learners interviewing residents of the community

They went back to school and in their groups learners were asked to design ways of solving the problem by using a plan of action. Then they reported their action plans to the whole class (see figures below).

Figure 4.22 Educator explains to the learners. programme of action

Figure 4.23 Learners reporting back their

The teacher scaffolded learning by encouraging learners to tabulate and suggested possible ways of interacting with the community to reduce and combat dumping within the community area. She further gave direction on different strategies that could be used to stop the problem, for example she advised them to write letters to the mayor, and the councillor of the ward and to engage with the community by

writing to the street ward members asking them to organise a meeting to address community members on their campaign and what they expect from them (see appendix 23 and figure 4.32 below).

In posing a problem for learners to resolve, the teacher informed learners of the financial predicament the school is experiencing which made learners think critically of strategies they can employ in order to help. The teacher asked learners to design different fundraising activities, and informed learners that their school was expecting visitors the following month. They came up with different things to make out of waste which could be used to raise funds.

Integration also formed part of this lesson. Learning Outcomes from the following Learning Areas were addressed: Natural Science, Arts and Culture, Languages 1 and 2 (isiXhosa and English) and Technology.

4.3.2.4. Learner participation

As shown above in section 4.3.2.3, the teachers all used different teaching methods in each of Lesson Plans. In this section I focus on how learners responded, and I focus specifically on learner participation, as this is an important aspect in active learning approaches (see section 2.3.2.2).

Lesson 1

This lesson comprised of six activities that were mainly group activities. The educator used question and answer to introduce the lesson. The educator paved the way to check learners understanding by using what the learners already know. In one activity, learners moved around the school and collected different waste.

Figure 4.24 Groups of learners collecting different waste

In this group activity, learners worked effectively with each other and helped one other. They enthusiastically carried out the task in a joint effort, and rushed to collect waste. I have observed that although they were given clear instructions, one learner decided to work alone and to not be part of the group (see figure 4.24 below). He decided to collect litter on his own, but eventually he was in the group because they were assigned to fill in the prepared audit sheet as a group.

Figure 4.25 Learner working alone

After they collected waste the learners sat on the lawn and sorted the different waste with help of the audit sheet. As groups learners discussed ways in which they could manage and reduce waste at school. In this activity they all contributed and made recommendations on the matter. In their groups learners recommended a whole school campaign on reducing waste, and competitions amongst classes.

Learners also took part in designing the animal figure by asking questions from Mr Loyiso and taking part in turns to make the structure. They discussed which animal they could use as a class project. Eventually they reached a compromise by deciding to use the elephant. They were very interested and jointly as a class worked together with the expert (Mr Loyiso) to make up the structure of the animal. As mentioned above, they asked him questions and had input on what kind of wire they would use which paints they will use.

Learners came up with different ideas of how the school could manage and reduce waste. Learners recommended that they recycle paper, they make sign posts that say "No littering", "Pick up papers" and they put these around the playgrounds and classrooms. They also decided to include the entire school.

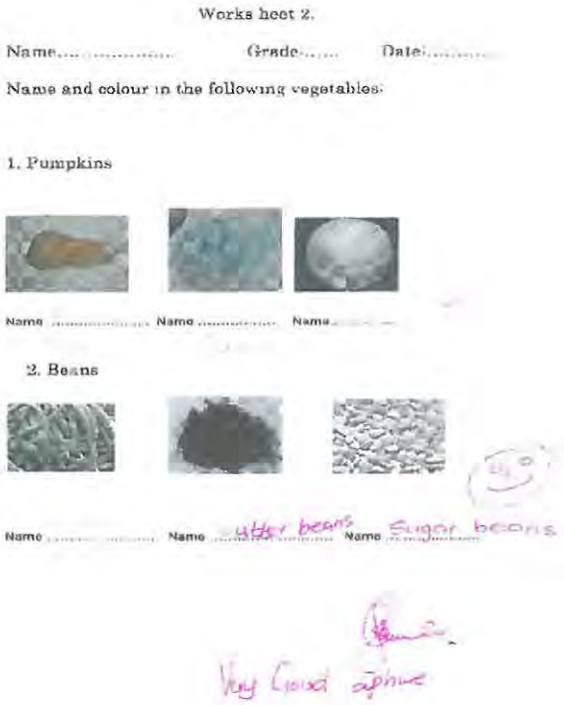
Lesson 2

As outlined above, this lesson comprised of six activities, including individual, pair and group activities. As mentioned above I started by acknowledging the learners' prior knowledge and allowed learners to help each other in the group activities. Learners counted seeds, helping each other 'fighting' for the opportunity to write down the answers. Figure 4.26 below shows learners counting seeds.

Figure 4.26 Learners counting seeds

At the beginning of the lesson I asked questions and learners responded positively, showing that they attach meaning to what was asked. "this is the butternut, this is the pumpkin, this is *iselwa*". When learners estimated what the produce would be if they planted their seeds, they showed that they undersoond that each seedling would produce a plant. They counted earnestly and their counting skills were portrayed. If one of the members of the group counted wrongly the other members corrected him/her.

Learners enjoyed the process of measuring their plots in the school food garden. When one member of the group was busy counting physically the other member helped the group member by counting loudly and writing down the answers. Some learners experienced difficulty in writing numbers and their names and using English language words when writing the names of the vegetables. The words that seem to be difficult were 'butternut', 'white pumpkin', 'blue pumpkin', and 'sugar beans'. I noticed the learners were having these difficulties, and wrote the names in the board, and they copied them down on their worksheets (see figure 4.27 below).


Works heet 2.

Name..... Grade..... Date:.....

Name and colour in the following vegetables:

1. Pumpkins

Name ..... Name ..... Name .....

2. Beans

Name ..... Name ..... Name .....

Very Good effort

Figure 4.27 Completed learner worksheet

When they planted the seeds, each learner had a chance to plant seeds. All the learners wanted to plant. When we came back to the class they completed the worksheet. This was an individual activity which learners seemed very interested in and they were enthusiastic to tackle the task. Most learners remembered the colour of vegetables but they were not so sure about the names of the vegetables.

When learners poured buckets of compost into their garden plots they did not understand that the 1 they wrote down represented 5 litres for each bucket. Instead of writing 1x5 litres they wrote 3. The mentors (the older learners) helped them with this counting activity and helped them to convert numbers of buckets to litres.

Lesson 3

As outlined above, this lesson comprised eight activities that learners participated in. The educator used learners experience and created an opportunity for learners to brainstorm and used a mind map and voice their views on waste at school, in their home community and in the school food garden. The mind maps showed that

learners already knew that waste is a problem in the school and the community (see figure 4.28 below). In this activity learners were encouraged to fill in the prepared worksheet and discuss their views and they lastly came up with the group's resolution and reported per group to the entire class. This emerged from groups "we should draw a working plan to stop littering", "at school and home we have too much waste", "as we litter we must stop doing so" (see audit sheet).

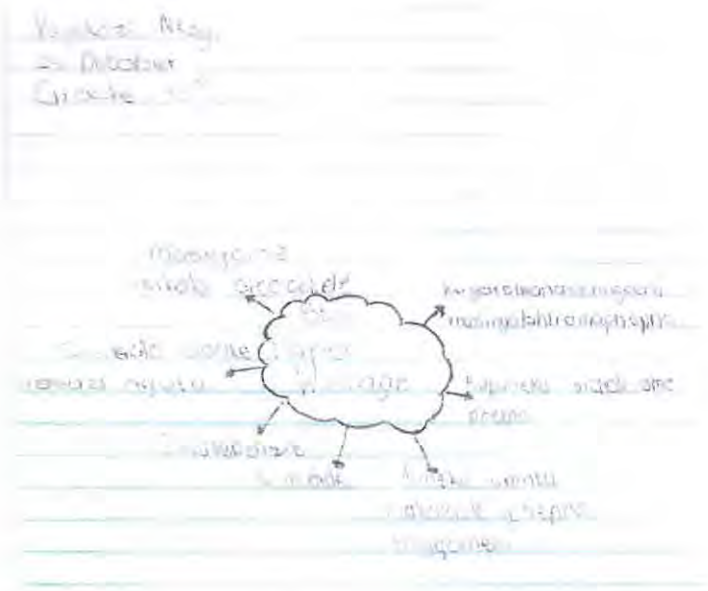


Figure 4.28 Learner's mind map

Learners struggled to understand some of the new vocabulary such as 'dumping', 'renewable' and 'non-renewable'. As is evident in the worksheet completed (see figure 4.29 below), learners did not gain an adequate understanding of these concepts as they seemed unable to complete the worksheet adequately. The teacher explained their meaning through-code switching and through relevant definitions. Learners used their mathematics skills and plotted on the bar graph what they analysed from the audit sheets. Figure 4.28 below shows learners busy in their group analysing the audit sheet and getting ready to plot the graph. There were vibrant arguments in the groups on how to plot information on the graph, and what kind of a graph to use. In the end they all used a bar graph (see figure 4.30 below). This helped them to compare and understand which was the most waste at school.

Figure 4.29 Group of learners analysing audit sheet

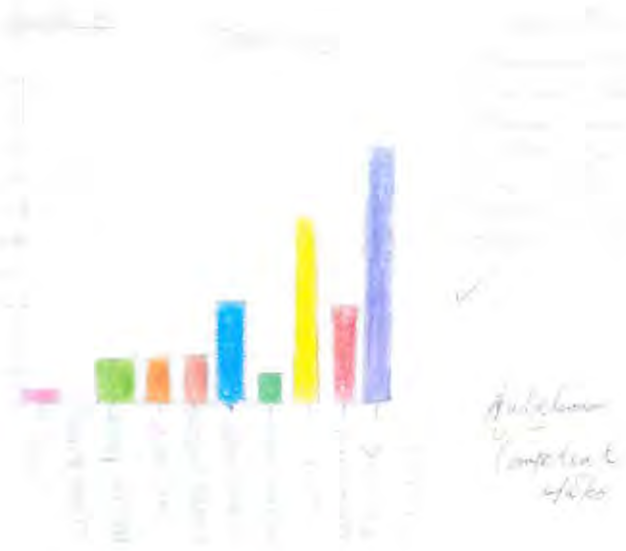


Figure 4.30 Bar graphs produced by learners

Learners were very eager to change the state of the site to what they anticipate it to be. They asked questions from the residents that will contribute towards improving the area and also sustain the change that the site will undergo. Learners individually voiced their views through poem writing. The poems were very interesting and learners voiced their feelings (see figures 4.20 above). Learners were innovative and designed their own questionnaire and interviewed residents about the dumping sites. They interviewed diverse residents in the process. They decided on their own to compare responses from different respondents, this helped them when they were drawing up the action plan.

Figure 4.31 Learners interview questionnaire

Work in groups was distributed evenly amongst group members. Learners were also in a position to ask questions like "you see there is a sign that says 'No dumping', why do you dump?" This showed that they understood that this sign should have been observed and they have an obligation to help the community to obey the municipality and that they understood that this dumping is detrimental to their health.

When learners were asked to devise strategies that would assist in working towards reducing, combating and discontinuing dumping, they wrote letters to the mayor, ward councillor and community residents. Learners worked together when they produced these works (see figure 4.32 below).

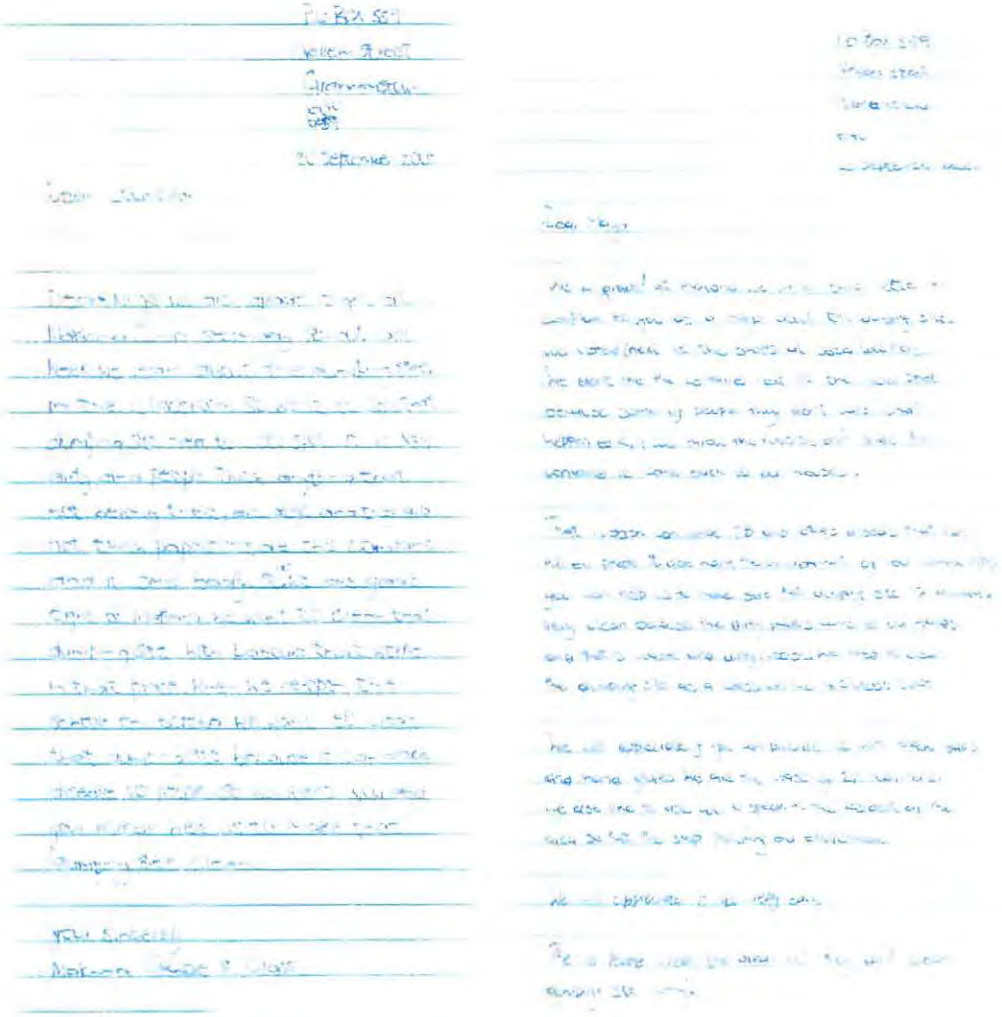


Figure 4.32 Examples of letters produced by learners after corrections

4.3.2.5. Evidence of learning

Learning took place in many ways during the process of implementing the active learning processes described in sections 4.3.2.3 and 4.3.2.4 above. As reported above learners participated actively in the different lessons. In all of the lessons, learners were encouraged to use the knowledge they have to understand the new concept the teachers were engaging them with. In all three lessons learners had opportunities to develop skills, knowledge and values when they were engaged in the tasks (see appendix 19).

Lesson 1

Skills: At the beginning of the lesson the teacher asked the learners questions about different waste, and learners answered the questions. In so doing, learners developed critical thinking skills. They developed analysis skills when they worked

with the audit sheet. They developed sorting skills at the time of sorting waste on the lawn. They developed design and making skills when they designed an animal that they are familiar with in their groups and also making the cow structure, although, because they were working in groups, they had to 'take turns' to contribute to the figure making which reduced the individual learners' opportunity to develop the skills fully. Lastly they developed the skill of papermaking. When they were busy with the process of designing during the group work process, they developed communication skills and skills to share experiences with others. They also developed writing and reading skills, and new vocabulary.

Knowledge: In the activities learners developed knowledge of how to keep their environment healthy and also developed an understanding of human rights issues. They developed technical knowledge when they planned for the making of the animal, which involved developing knowledge of using the appropriate tools and materials, measuring, marking, and cutting. Learners developed knowledge of describing, comparing and constructing. They also developed technical knowledge in the paper-making activity and knowledge of recycling (waste management).

Attitudes/values: Learners developed respect for the opinions of others, and also taking pride in their work. They developed attitudes for working responsibly with tools, and for using resources economically. They also learned about responsibility for the environment and how recycling contributes to sustainability. Learners developed appreciation of others and an ethos of collaboration when they worked in groups and as members of the class.

Lesson 2

Skills: Learners developed skills to communicate with each other and with the teacher. When they wrote answers in the worksheets they developed writing and reading skills, although not all learners could develop these skills equally as the worksheets were given to the group. If each learner had been given a worksheet, they could have all had an equal chance to develop the writing skills and they would not have had to 'fight' to fill in the worksheet.

They also developed mathematical skills such as counting and measuring when they were working in the school food garden. They developed practical skills to grow food (planting seeds and putting compost in to enrich the soil). Learners also developed skills to judge between the different measures when they measured the garden in

different ways using different strategies such as foot pacing, strings and measuring tapes.

Knowledge: Learners learnt to work with numbers and operations (added the seeds and estimated the anticipated harvest), and they found relationships between the seeds and the vegetable garden measurement and compost counting activity.

Attitude/values: Learners developed care of plants and other living things and appreciation of people-plants relationship, awareness of human rights and a healthy environment. They developed teamwork (*ubuntu*) and respect for each other when working in groups.

Lesson 3

Skills: The learners developed classification skills when they were asked to fill in the audit sheet, but they did not appear to understand the concepts of 'renewable' sources of waste' and 'non-renewable', so were not able to successfully complete the worksheet, which indicates that they were not able to develop these skills fully (see figure 4.9). The class as a whole developed skills to evaluate and address environmental health problems when they visited the dumping area. They could see how this was harmful to animals and humans. When they visited the dumping site they developed observation skills. They developed skills on how to draw up an action plan to solve these problems, they showed evidence of being able to make informed decisions hence they wrote to the mayor, the ward councillor and the community residents. They interviewed people and developed inter-personal skills and also developed their communication skills through interacting with each other in groups and in class. When they used the information in graphs learners developed the skill of drawing the graph by hand and interpreting the data. They also presented the data (from the audit sheets) accurately in graphical form. When they thought of making things to sell for fundraising, they also developed entrepreneurial skills.

Knowledge: Learners developed knowledge of environmental health problems, health risks (to humans, animal and the environment), rights and responsibilities. They developed entrepreneurial knowledge. They also developed knowledge of local governance structures and knowledge of waste management strategies and approaches, as well as knowledge of waste management issues.

Attitudes/values: Learners developed respect for rules and environment when they asked one of the respondents about the sign that says, "No dumping" (see appendix 22). They developed concern/responsibility for the environment because they developed action plans to clean the area. Learners saw a need for the importance of informed decisions and healthy choices when they brainstormed solutions. They developed respect for the community and environment, self-respect and sense of responsibility. They developed respect for each other's views through group interactions.

4.3.3 Reflections on implementing the lessons

This section draws mainly on the reflective focus group discussions we held at the end of each of the lessons. As teachers, we reflected on the following aspects of our work:

- The links that we had made between the School Environmental Policy and the Lesson Plans, and how these influenced the active learning work,
- Our teaching methods,
- The learners' participation,
- Working with the NCS (R-9) Learning Outcomes and Assessment Standards, and
- What some of the difficulties were with implementing active learning approaches and some of the benefits.

Each of these is discussed briefly below, with a more in-depth analysis on the whole process provided in Chapter 5.

4.3.3.1 Links between the School Environmental Policy and the lessons

In the focus group discussion, we encouraged each other to use the School Environmental Policy as a reference when we planned the lessons. We reflected that the School Environmental Policy had helped us to work towards the improvement of the school environment and make school community links. Educator 1 mentioned that learners were involved in practically making decisions and planning activities that could be taken into account in responding to the problems. Educator 2 also saw the link between the School Environmental Policy and the NCS (R-9) because she mentioned that the "School Environmental Policy had helped us as a school to put

environmental learning and a contextual approach at the centre of learning in school". She further explained that this was done "with the help of the Learning Outcomes from the NCS (R-9) that have an environmental focus".

My reflections on the links between the School Environmental Policy and the lessons were that the School Environmental Policy has paved the way for teachers to implement the requirements of the curriculum and has also helped to organise the learning content. It also strengthened the process of working with the NCS, as we worked closely with the Learning Outcomes and Assessment Standards when planning and teaching.

4.3.3.2 Teaching methods

In the focus group discussions teachers' saw their teaching methods as a valuable way of making learning meaningful and as a way of helping learners undertake tasks and learn as anticipated by the Learning Outcomes.

My reflections on the teaching methods used are that learning is scaffolded by teacher's innovations and that teachers should make use of different teaching methods to enhance learning. From the experience, it was clear that using different teaching methods create opportunities for learner centredness and active learning. Through group work, learning can be organised as a social activity where learners can learn from each other. However, as indicated above, group work can also deny individual learners opportunities to write, draw, make things and read as others in the group may end up doing the writing, reading, making etc. while the rest watch and wait their turn. This would seem to indicate that group work should be carefully planned so that it does not deny learners these opportunities. It would probably have been better if the Grade 2 learners did not have to 'fight' to write on a worksheet – and on reflection, I could easily have avoided this problem by providing each learner with his/ her own worksheet to fill in (rather than one worksheet per group).

4.3.3.3 Learner participation

During the focus group it was evident that teachers were impressed with how they had managed learners' involvement during activities, and that learners had made learning meaningful because they were using what they already knew in order to understand what was new in the learning setting.

My reflections on learner participation is that knowledge is interpreted as a social process of knowledge construction rather than an object for students to internalise. I also learnt that meaning and knowing are negotiated and dynamically created through participation in socially organised activities. When learners are socially working together they learn from others' experiences. Learners, when guided in participation processes that develop links between their previous experience and competences, will show what skills and information are needed to solve new problems. I also noticed that learners enjoyed the learning experiences that they were exposed to, but as noted above, without careful assessment of *individual learning* it is difficult to establish exactly how much each individual learner has gained from the participatory process.

4.3.3.4 NCS (R-9) Learning Outcomes and Assessment Standards

During the focus group discussion educators were convinced that Learning Outcomes and Assessment Standards have a potential to make learning meaningful to a learner in context. They claimed that the NCS (R-9) has been carefully looked at and implemented. One of the teachers said that "this research has given us an easy way to implement the curriculum and also help in school environmental improvement".

My reflections are that Learning Outcomes and Assessment Standards strengthen learning in context and also that working with these Learning Outcomes in relation to context can help to contextualise learning. This process assists with making the NCS more accessible to teachers, and helps to make it more easily interpretable by educators. This process of situating curriculum development work in our school context has helped us, as teachers, to strengthen curriculum implementation. Focusing on active learning in the context of the curriculum has helped us to focus on what the School Environmental Policy requires, which is to contribute to school and community improvement through learning. Through working with the curriculum, we have been able to contribute to environmental learning. In conclusion the NCS created an opportunity for us to design a learning framework that promotes active learning.

I have, in more recent reflections, also noticed that we have not paid enough attention to the actual assessment of learners' work in relation to the Assessment Standards. We did not, for example, meet to assess learners' work against the

Assessment Standards and we did not consider the required scope and depth of knowledge, skills and attitudes embedded in these Assessment Standards. I have become more conscious of this after participating in the Grade 8 and 9 NCS training process. We implemented our lessons with the 'spirit' of OBE, but perhaps not with enough attention to the detail in the assessment framework of the NCS.

4.3.3.5 Difficulties and benefits of implementing active learning approaches

In this section I will discuss some difficulties and benefits of implementing the active learning approach. These discussions will start from the planning session to the implementation process.

The active learning process is a new approach to learning, and educators are not well versed with it. There is a tendency to misinterpret or conflate this kind of learning with participation and group work. Our lessons showed an abundance of group work and we expected learners to produce a number of 'products' of learning together. There was not the same emphasis on individual learning products. The word 'active' seemed to simply mean participation. Planning and implementing lessons where learners are doing something together was seen by my colleagues as active learning. I initially tried to orient my colleagues to pay more attention to a 'balance' of educational processes of 'cultural induction, encounter experiences and critical reflection' (O' Donoghue, 2001:5). When we started the research I introduced my colleagues to the Active Learning Framework of O' Donoghue (2001), and it was clear that they had not previously considered more in-depth approaches to thinking about active learning.

On the other hand the school and the community benefited from the process of implementing the active learning lessons. The process improved teachers planning skills. We planned for environmental education processes in the context of the NCS (R-9). Teachers had a better understanding of mobilising learners' prior knowledge and experiences and of encouraging learners to share information. The active learning focus also enabled us to plan activities that enable summative assessment of Learning Outcomes.

The active learning approach also enabled us, as educators, to take into account the integration of Learning Outcomes and Assessment Standards when planning and teaching. However, through insufficient focus on of the Assessment Standards and

their requirements this integration is not as substantial as it might have been. I reflect on this in more depth in the next chapter (see section 5.5).

Active learning also helped to engage in cooperative meaning-making activities. Active learning has benefits such as increased environmental awareness, cleaner environments, local school-community participation, learner empowerment to actively resolve environmental problems, and participation in school-community networks and partnerships. In addition, school environmental activities have the potential to contribute to income generation and food security and can therefore help to relieve poverty. Active learning encourages learners to take an active role in how their school can be run and therefore enhances democratic process in a school.

4.4 CONLUDING SUMMARY

As indicated in section 1.2 in chapter 1, the goals of this research were to explore the relationship between development of a School Environmental Policy and active learning processes in the context of NCS (R-9).

Cycle 1 of the study focused on the development of the School Environmental Policy that informed the planning and implementation of lessons that enhance active learning. Cycle 2 of the study focused on planning and implementing the lessons and reflecting on our praxis. In both phases of the study the NCS (R-9) was a central influence on our thinking and practice.

In both cycles my colleagues and I were involved in the process of exploring ways of creating opportunities to enable active learning processes that would also improve environmental issues in the school context and the immediate community. As educators, we planned and facilitated discussions around active learning in the planning session, and taught our lessons in accordance. We did not, however, give enough attention to the assessment process, an issue which I will reflect on in more depth in the next chapter.

Learners participated actively in different activities, and teachers used a range of methods and different strategies to scaffold their learning (e.g. providing language support, worksheets, and clear instructions). As a team of educators working together, we all developed active learning activities in accordance with the requirements of the NCS (R-9).

This chapter indicated how we, as teachers,0 interpreted active learning in response to contextual priorities and issues, as identified in our School Environmental Policy, and in response to the Learning Outcomes of the NCS (R-9). It also reflects on how learners responded, and what evidence of learning we could identify. We also realised that we should have paid greater attention to assessment in the process, as this would have given us more in-depth insight into the actual learning at an individual level. Reflection on the process has also indicated that there was an abundance of group work in the active learning process, which could have denied some learners opportunities to read, write, draw or make things individually.

In the next chapter I will summarise and discuss the research findings in more depth, drawing on broader insights from the contextual discussions and previous research findings reported in chapter 2. In doing this I will reflect on what has been achieved through this research process in responding to the research question, and in doing so, I will review the links between School Environmental Policy, active learning and the NCS (R-9).

CHAPTER 5

SCHOOL ENVIRONMENTAL POLICY AND LINKS TO ACTIVE LEARNING

5.1 INTRODUCTION

In this chapter I review and discuss the findings that emerged during the research process. This chapter draws on data analysed in chapter 4 and the contextual and theoretical perspectives presented in chapter 2. This chapter directly addresses the research question, which sought to investigate the links between the development of a School Environmental Policy and active leaning in a school. To do this, I consider the contents of the School Environmental Policy and carefully analyse how the elements of the School Environmental Policy relate to, or have contributed to, active learning.

To structure the discussion in this chapter I firstly conducted an analysis to establish which of the School Environmental Policy goals were addressed through the active learning processes reported on in Chapter 4. I then developed a set of analytical statements as suggested by Bassey (1999) (see section 3.5) to discuss the links between the School Environmental Policy and the active learning processes. The analytical statements used to structure this chapter are as follows:

- **Analytic Statement 1:** The School Environmental Policy led to the planning of active learning processes.
- **Analytic Statement 2:** The School Environmental Policy and the active learning approach are consistent with OBE policy and philosophy.
- **Analytic Statement 3:** The School Environmental Policy and the active learning approach strengthened the use of Learning Outcomes, but not necessarily Assessment Standards.
- **Analytic Statement 4:** The active learning approach promoted enquiry in lessons.
- **Analytic Statement 5:** The School Environmental Policy and active learning processes contributed to school improvement and work towards a healthy environment.
- **Analytic Statement 6:** The School Environmental Policy encouraged educators to address school community environmental issues and build stronger links with parents.

5.2 EVIDENCE OF ACHIEVED POLICY GOALS

To establish which of the policy goals were achieved, I report on each lesson in relation to each of the policy goals as outlined in the School Environmental Policy developed by the school (see section 4.3). This analysis provides the background for the rest of the discussion in this chapter, and is contained in Table 5.1 below.

Table 5.1 Evidence of achieved policy goals

POLICY STATEMENT	EVIDENCE OF ACHIEVING POLICY GOALS THROUGH LESSONS (L1, 2 and 3 as reported in Chapter 4, see section 4.3.1)
Plan lessons based on active learning: Teachers' planning.	**L1:** The teacher interpreted and designed an action-based lesson that is focused on the waste-related issues in the Makana school-community context. The content of the lesson was linked to context. The teacher designed a Lesson Plan that was based on Learning Outcomes and Assessment Standards. The teacher developed LTSM that encouraged active and co-operative learning.
	L2: The teacher interpreted and designed an action based lesson that is focused on food security issues and school food gardening which is a relevant issue in the Makana school-community context. The content of the lesson was linked to context. The teacher designed, a Lesson Plan based on Learning Outcomes and Assessment Standards of the NCS (R-9). The teacher adapted activities from a resource book called 'Learning to Grow' and designed worksheets that were appropriate for learners. The worksheets were accompanied by pictures that required the learners to recall information and interpret information.
	L3: The teacher interpreted and designed an action based lesson that is focused on the context of the learner. The content of the lesson was learner friendly. The teacher designed lesson based on Learning Outcomes and Assessment Standards of the NCS (R-9). The teacher adapted the LTSM from a Grade 5 textbook and used the audit sheet from the same grade. Given that this is a Grade 8 group, the use of Grade 5 material may not have provided adequate scope and depth.
Design learning framework that will promote enquiry: How lessons promote enquiry?	**L1:** Learners asked questions based on what they discovered from the audit sheet. Learners also were engaged in mind maps that will work towards improving the management ofwaste of paper in the school. Learners sorted the waste and identified the most waste and people responsible for the waste.
	L2: No enquiry was evident except for when learners were measuring the garden and when they counted the compost heaps that were put into their plots.

POLICY STATEMENT	EVIDENCE OF ACHIEVING POLICY GOALS THROUGH LESSONS (L1, 2 and 3 as reported in Chapter 4, see section 4.3.1)
Active learning and OBE: What did learners do?	**L1:** The teacher mobilised prior knowledge by asking questions and learners showed their experiences by answering back. They worked on an issue related to problems of waste in their context. They used information from the audit sheet to draw up their strategies how to reduce waste. No information-based materials were handed out or used. Learners were not able to access new information on waste issues. They undertook actions to find solutions to reduce waste and involved the whole school in recycling processes. Learners participated actively in enquiry-based activities, when they undertook the waste audit, drew mind maps and collected waste.
	L2: The teacher mobilised prior knowledge by asking questions and learners showed their experiences by answering back. There was no issue-based problem, but the focus was on plants and food. They used information from class (provided by the teacher) and planted the seeds on their school garden plots. They undertook actions of planting seeds that were useful in their homes and tried to find solutions to take care of their plants and keep their garden clean. Learners were actively involved in all activities e.g. counted, estimated measured and planted seeds but they did not investigate any problem. They were, however, engaged in an activity to find out how much compost was needed.
	L3: The teacher mobilised prior knowledge by asking learners to draw a mind map and they showed that they have experience of the concept They worked on an issue based on problems of waste in their community (dumping site). The teacher used the resident's response to scaffold learner's letters writing to the Mayor, Ward Councillor and ward meeting. They undertook actions to find solutions on how to reduce waste and how they can involve the whole community in keeping the dumping site free of littering Learners were actively involved in enquiries when they interpreted the audit sheets, plotted in the bar graph, wrote their feelings about the dumping site etc.
NCS (R-9) Learning Outcomes and Assessment Standards: What Outcomes and Assessment Standards were addressed?	**L1:** Drew on Learning Outcomes that have an environmental focus such as Learning Outcome 1: Creating, interpreting and presenting (Arts and Culture) and Life Orientation Learning Outcome 1 on Health Promotion: Assessment Standard 2: Investigate local environmental health problem using different data sources, and plan a strategy to address the problem. The teacher did not assess learners according to the Assessment Standards identified for this particular lesson.
	L2: Drew on Learning Outcome 1: Numbers, operation and relationships and Learning Outcome 4: Measurement and Assessment Standard 8: Can perform calculation, using appropriate symbols to solve problems. I did not take Learning Outcomes into consideration when I assessed learners. I did not use Assessment Standards when designing the instrument for assessment. Assessment was more informal. Learner's achievement was recorded although it was difficult when I had to interpret symbols for a mark. I also gave marks for the learners' journal entries when they wrote on their feelings about the lesson.

POLICY STATEMENT	EVIDENCE OF ACHIEVING POLICY GOALS THROUGH LESSONS (L1, 2 and 3 as reported in Chapter 4, see section 4.3.1)
	L3: Drew on Learning Outcome 1: Health Promotion and Assessment Standards 2 (of the intermediate phase): Investigate a local environmental health problem using different data sources and plans a strategy to address the problem. Instead of using Learning Outcome 1, Assessment Standard 4: Demonstrate informed, responsible decision-making about personal health and safety, and Learning Outcome 3: Assessment Standard 6 (draws up an action plan to apply problem-solving skills in a personal context (senior phase), the teacher used an Assessment Standard that was designed for Grade 5, which seems to have been influenced by the textbook material (designed for the Grade 5 Assessment Standards) when marking, but errors were not attended to.
Encourage educators to take charge in identifying environmental issues.	**L1:** Teacher identified the issue of waste in the school context.
	L2: Teacher did not focus on environmental issues, but rather on environmental processes (growing plants), although this is linked to ensuring food security in the school and community.
	L3: Teacher identified the issue of unhealthy waste management practices in the community.
Improve school environment towards sustainable development.	**L1:** The school environment was improved through a recycling project and including of other grades in the project.
	L2: New plants were planted in the school food garden Longer term sustainable development objectives can be achieved through school food gardening activities as school food gardens address poverty-related issues such as food security.
	L3: Learners developed strategies to monitor dumping in the community and made links with the authorities responsible for waste management in the community through their letters.
Improve identified issues and work towards a healthy environment.	**L1:** Learners made items from waste such as plastic mats, hats, trophies and motorcars from 2-litre plastic bottles, papermaking and a structured animal. They also made posters (see appendix 5),
	L2: Healthy eating and caring for non-living things.
	L3: Keeping the community free of littering and pollution and develop pride.
Build strong working relations with parents and entire community.	**L1:** Teachers asked parents to bring recycled materials to school e.g. News papers, cereal boxes, plastic and 2 litre plastic bottles and cereal boxes.
	L2: Parents are part of the garden project in the school. Learners asked parents to help with their homework.
	L3: Learners wrote letters to the mayor and ward councillor and held meetings with community members.
Involve learners in campaigns that will create awareness and respect for the environment.	**L1:** Grade 5 learners recommended that the wider school should be involved in the recycling process.
	L2: Learners did not involve others in environmental action, but were involved in environmental action themselves (planting and caring for the garden).
	L3 During reporting back learners suggested that they wanted to meet with the community and engage them in cleaning up the dumping site. They took up an activist role by writing to the mayor and the ward councillor.

As can be seen from the above analysis, many of the School Environmental Policy goals were achieved through the active learning processes. At the same time, the NCS was being used to guide the active learning processes for the various grade specific lessons in the different phases, and the content of the lessons was linked to context. This shows that School Environmental Policy goals and school improvement can be achieved through active learning in the context of the NCS Learning Outcomes and Assessment Standards. The combination of the School

Environmental Policy and the active learning processes guided by the NCS Learning Outcomes and Assessment Standards together assisted teachers and learners in this case study context to work towards a healthy environment, which is one of the principles of the NCS.

I now discuss this finding in more depth, through using analytic statements as indicated in section 3. 5.

5.3 ANALYTIC STATEMENT 1

The School Environmental Policy led to the planning of active learning processes

The data from lessons 1, 2 and 3 indicates that educators interpreted the curriculum (how and what to teach) and designed participatory, learner-centred and activity-based lessons that were focused in the context of the learner, following the development of a School Environmental Policy. From table 5.1 above, it can be seen that there are clear links between the objectives of the School Environmental Policy and the active learning processes. In general, it seemed that the content of the lessons were learner-friendly as learners responded well (see section 4.3.3.3). Teachers also designed lessons that were based on Learning Outcomes and Assessment Standards that enabled contextual applications and which allowed for active learning (see section 5.3 below).

Following the development of the School Environmental Policy with parents, teachers planned as a team and considered issues of active learning, and integration. Team planning that emphasised the context of the learners' response to the requirements of the NCS (R-9), which is based on Learning Outcomes and Assessment Standards and also encourages activity-based approaches to education (DoE, 2002b).

The School Environmental Policy focused on school improvement, active learning and parental involvement, and there is evidence to suggest that these focus areas were achieved through the lessons (see table 5.1 above). The 1995 White Paper on Education and Training (RSA, 1995:13) emphasised the need for an "interdisciplinary, integrated and active approach to environmental education" in all levels and phases of education and training. These developments have led to the defining of an environment and sustainability focus in all Learning Areas, which also

takes into account the context of learners (NEEP-GET, 2005). Through the development of a School Environmental Policy in Makana Public Primary School, these objectives of the White Paper on Education and Training and the NCS were implemented in the three Lesson Plans.

Lotz and Oliver (1998) drawing on Cornbleth (1991) argue that curriculum is a contextualised social process and that Learning Programme development in environmental education should not only be focused on content, but should also be responsive to context and arising issues (see section 2.2.3). During the planning session and during reflections teachers indicated that the School Environmental Policy helped them to consider both the content and the context of learning, as the clauses of the School Environmental Policy are understandable and they required teachers to explore active learning. The study shows evidence of praxis as teachers used the active learning framework and interacted with the NCS (R-9) policy document. They discussed the activities that they were planning in the classroom, and linked these discussions to the contents of the School Environmental Policy, implemented the activities and then reflected on the lessons in the context of the School Environmental Policy.

The School Environmental Policy opened a way for the school to identify environmental problems. This has portrayed the usefulness of the School Environmental Policy to stimulate use of an active learning approach to learning. The process of Lesson Planning and lesson implementation created an opportunity for teachers and learners to be fully involved in decision-making, planning and activities.

5.4 ANALYTIC STATEMENT 2

The School Environmental Policy and the active learning approach is consistent with OBE policy and philosophy

The Makana Public Primary School's Environmental Policy emphasised the following aspects that are consistent with OBE policy and philosophy:

- *Teachers should be the designers of Learning Programmes:* The School Environmental Policy process allowed teachers to identify issues of relevance in the school-community context that could be incorporated into Learning

Programmes. Teachers planned lessons based on these contextual discussions.

- *Learners should be involved in active learning approaches that promote enquiry:* In emphasising these dimensions, the School Environmental Policy promoted achievement of the Critical Outcomes that focus on problem solving, teamwork and participatory learning.
- *Develop lessons that implement the Learning Outcomes and Assessment Standards of the NCS:* Learning Outcomes and Assessment Standards are the policy mechanism for implementing an Outcomes-Based Education philosophy. The School Environmental Policy required teachers to work with these planning frameworks to implement OBE policy and philosophy.
- *Build stronger links with the community:* School-community links and relationships have been emphasised in South Africa's OBE philosophies, through the emphasis on context in interpreting the Learning Outcomes (see section 2.2.4).
- *Apply active approaches to improve the school environment and work towards a healthy environment learning*: This emphasis in the School Environmental Policy is consistent with the principles of the NCS (see section 2.2.2).

The NCS (R-9) envisages learners that are "active, participatory independent, confident, literate, multi-skilled... with respect for the environment and the ability to participate in society as a critical and active citizen" (DoE, 2002:c Overview Statement: 11). The study indicates the active learning approach enabled situated and contextually-orientated learning, which is also one of the NCS (R-9) requirements, and is consistent with the policy and philosophy of OBE (DoE, 2002b). Teachers implemented lessons that encouraged learners to work with information and undertake investigations, while being actively engaged in becoming actively engaged citizens showing a respect for the environment. This is in line with the new curriculum needs, and thus with OBE policy and philosophy.

An active learning approach implies that knowledge cannot simply be transmitted from the teacher to the learner, it is constructed and reconstructed by the learner engaged in a culture of learning at school (see section 2.3.2.2). The NCS (R-9) anticipates learning that is learner-centred and that learners take some responsibility for their learning. The research indicates that in all three of the lessons learners were

encouraged and supported by teachers to work independently or in groups through activities such as investigating the waste and dumping problems, reporting back on their findings, devising strategies for solving problems, counting the seeds, estimating answers, planting, measuring the garden etc. Learners were actively involved in the learning process. Piaget (cited in WCED, 2000) views action as being important in the learning process. On the other hand Vygotsky emphasises the importance of culture, language and social interaction in the process of learning. Both views align themselves with the new approach to learning in South Africa introduced by OBE policy and philosophy, as discussed in section 2.3.2.1. The NCS (R-9) envisages active learning and allows for inclusion of both content and context in learning. Hence the Learning Outcomes, Assessment Standards and Principles encourage the importance of, and use of, learner's prior knowledge. Through engagement with active learning approaches in the context of the School Environmental Policy, teachers applied various strategies to mobilise learners' prior knowledge and understanding. The study illustrates how a School Environmental Policy which supports active learning approaches can also reflect and support constructivist approaches to learning, as promoted by OBE policy and philosophy in South Africa. In the lessons, learners drew on their prior knowledge and experiences to internalise knowledge during social interaction in their groups.

5.5 ANALYTIC STATEMENT 3

The School Environmental Policy strengthened the use of Learning Outcomes, but not necessarily Assessment Standards

While the School Environmental Policy led to the planning of active learning processes (see section 5.1 above), and to approaches that are consistent with OBE policy and philosophy (see section 5.2 above), closer examination of the actual achievement of OBE policy objectives, as articulated in the Learning Outcomes and Assessment Standards of the NCS, provides more detailed evidence of whether the School Environmental Policy and the active learning approaches contributed to the achievement of educational policy as intended by the Department of Education. I discuss the findings of a more detailed examination of achievements in relation to Learning Outcomes and Assessment Standards in the three lessons here.

All three of the Lesson Plans that were developed show that we as a group of teachers in our school have engaged with the process of incorporating Learning

Outcomes and Assessment Standards in our planning to guide the lessons (see section 4.3.1). The study further illustrates that starting from the planning and implementation of lessons, learners in all three lessons acquired different skills guided by the identified Learning Outcomes of the NCS (R-9) that are appropriate to the environmental concerns relevant to our school environment (as envisaged by our School Environmental Policy) in each of the three selected Learning Areas (see section 4.3.2.5).

Teachers drew on different Learning Outcomes and Assessment Standards and used integration as a strategy to ensure that the lessons had an environmental focus and to create a context for the learning. For example Teacher 1 drew on Learning Outcome 1 of Arts and Culture (Creating, interpreting and presenting), which she integrated with Life Orientation Learning Outcome 1 (Health promotion), and particularly Assessment Standard 2: Investigate a local environmental health problem using different data sources, and plan a strategy to address the problem. I (Teacher 2) drew on Mathematics Leaning Outcome 1 (Numbers, operations and relationships) and Learning Outcome 4 (Measurement), with associated Assessment Standards. I however, also integrated the Mathematics with Life Orientation Learning Outcome 1 (Health Promotion), and focused on Assessment Standard 2. Teacher 3 drew on Life Orientation Learning Outcome 1 (Health Promotion), and like the intermediate phase teacher, she used Assessment Standard 2: Investigate a local environmental health problem using different data sources.

As a group, we took integration within and across the Learning Areas into consideration. As shown above, I integrated two Assessment Standards in Mathematics while also integrating with Life Orientation, and Teacher 1 integrated Arts and Culture with Life Orientation. We also considered how learners would benefit from these Learning Outcomes and Assessment Standards, and we reviewed the chosen Learning Outcomes to ensure they would strengthen and support environmental learning in response to the challenges identified in our School Environmental Policy.

Table 5.2 Shows expected achievements according to Assessment

Learning Outcome and Assessment Standards	Expected achievement in the knowledge, skills and values (based on Assessment Standards)
L 1 (Grade 5) Arts and Culture LO1: The learner will be able to create, interpret and present work in each of the art forms.	Learners were expected to be able to: **Life Orientation:** Investigate local environmental health problem (have knowledge of health problems). Use different data sources: (be able to distinguish between and use different data sources) and plan a strategy to address the problem (have the knowledge and skills to undertake strategy planning). Participate and collaborate **Arts and Culture:** o Create a work o Interpret a work o Present a work in an art form
L 2 (Grade 2) Mathematics Lo 1 and LO4: The learner will be able to recognise describe and represent numbers and their relationships, count, estimate, calculate and check with competence and confidence in solving problems. LO4: The learner will be to use appropriate measuring units, instruments and formulae in variety of contexts.	Learners were expected to able to: **Mathematics** 1. Participate and collaborate. Complete addition sums using whole numbers with at least 2 digits. o Describe numbers and their relationships o Count o Estimate o Calculate in different contexts o Check their calculations o Show confidence and competence in their calculations in problem solving o Use different measuring units o Use different measuring instruments o Use different measuring formulae.
L 3 (Grade 8) Life Orientation LO 1: The learner will be able to make informed decisions regarding personal, community and environment.	**Life Orientation:** AS4: Demonstrate informed responsible decision making knowledge of personal health and safety issues (e.g. how waste creates health risks). o How to reduce waste that leads to health risks. o Identify diseases that are detrimental to their health o Strategies on how to prevent diseases o Healthy eating and living healthy lifestyle

Table 5.3 Shows knowledge, skills and values gained by learners.

Actual knowledge, skill and attitudes/ value gained by learners		
L1	T1	**Skills** Critical thinking skills when they answered questions on different types of waste they know about. Analysis skills when they worked with the audit sheet (although this was not adequately completed). Sorting skills at the time of sorting, waste on the lawn (although they did not fully understand the categories of 'renewable and 'non- renewable'). Design and making skills when they designed an animal that they are familiar with in their groups and also when making the elephant structure. Skill to make paper. Communication skills and skills to share experiences with others. Learners developed writing and reading skills, and new vocabulary (although not all learners were able to develop reading & writing skills because of group-based reading and writing activities). Skills of describing, comparing and constructing. **Knowledge** Knowledge on how to keep their environment healthy. Knowledge of human rights issues, when they were aware of the fact that it is necessary for humans to live in a healthy environment. This was evident when they developed signposts for the school to stop littering. Technical knowledge when they planned for the making of the animal, which involved developing knowledge of using the appropriate tools and materials, measuring, marking, and cutting. Technical knowledge in the paper-making activity and knowledge of recycling (waste management). **Attitude/ values** Respect for the opinions of others, and pride in their work. Attitudes for working responsibly with tools, and for using resources economically. Responsibility for the environment and how recycling contributes to sustainability. Appreciation of others and an ethos of collaboration when they worked in groups and as members of the class.
L2	T2	**Skills** Critical thinking skills, when responding to asked questions by the teacher. Communication skills, when communicating with each other and with the teacher. Writing and reading skills (when filling in the worksheets, although not all learners had the opportunity to read and write due to group-based worksheets). Mathematical skills such as counting and measuring when they were working in the school food garden. Practical skills to grow food (planting seeds and putting in compost to enrich the soil). Skills to compare the different measures when they measured the garden in different ways using different strategies such as foot pacing, strings and measuring tapes. Calculation skills, estimation skills, skills to describe numbers and their relationships. **Knowledge** Knowledge of numbers and operations (added the seeds and estimated the anticipated harvest), Knowledge of relationships between numbers when counting seeds, estimating the harvest and measuring the vegetable garden measurement and during the compost counting activity. **Attitudes/ values** Care of plants and other living things. Appreciation of people-plant relationships. Awareness of human rights to be able to plant food for themselves and others, and care for a healthy environment. Teamwork (*ubuntu*) and respect for each other when working in groups.
L3	T3	**Skills** The class as a whole developed skills to evaluate and addresses environmental health problems when they visited the dumping area.

		When they visited the dumping site they developed observation skills. Skills on how to draw up an action plan to solve problems, skills to make informed decisions. Skills to interview people. Inter personal-skills and communication skills. Interpretation and comparison skills. Skills to construct graphs and interpret the data. Skills to present the data in graphical form Entrepreneurial skills for fundraising. **Knowledge** Knowledge of environmental health problems, health risks and rights and responsibilities. Entrepreneurial knowledge. Knowledge of local governance structures. Knowledge of waste management strategies and approaches, as well as knowledge of waste management issues. **Attitude/ values** Respect for rules and the environment. Concern/ responsibility for the environment. Respect for the community and the environment, self-respect and a sense of responsibility. Respect for each other's views through group interactions.

An examination of the actual knowledge, skills and values gained in the lessons, as compared to the expected knowledge, skills and values (as shown in the Assessment Standards) shows that on the whole, learners were able to develop skills, knowledge and values as expected by the Assessment Standards.

As shown in tables 5.2 and 5.3 above, in lesson 1 learners were able to investigate a local health problem and find solutions to the problem, and develop skills of creating, interpreting and presenting an art work at the appropriate level (Grade 5). In lesson 2 learners developed mathematical skills as anticipated by the grade 2 Assessment Standards through the lesson on food security. In lesson 3 the teacher used Assessment Standards of the intermediate phase in the senior phase, instead of using Life Orientation Learning Outcome 1 and Assessment Standard 3 and 4; which expected learners to learn about disease prevention and lifestyle choices and demonstrate informed, responsible decision making about health and safety.

It also emerged from the study that educators did not fully understand the process of assessment as required by the Assessment Standards, as assessment of learners work was not done carefully against the Assessment Standards. This can be seen in figures 4.9 and 4.10 where worksheets were given to learners, and assessed by the teacher when they did not really address the Assessment Standard or level required of Grade 8 learners.

As shown in the analysis above, working with the Assessment standards requires teachers to 'unpack' the embedded knowledge, skills and values expected at a particular level and then to teach lessons that will enable learners to achieve this knowledge, skills and values. This becomes more complex when integration takes place, as teachers need to 'unpack' the expected knowledge, skills and values associated with Assessment Standards in more than one learning area.

While we did assess the learners' work (see evidence of learners work in chapter 4) we did not conduct a thorough assessment against Assessment Standards and the expected knowledge, skills and values at the end of the lesson plan, despite the fact that an Assessment Standard was included in the lesson plan. If we had done this, we may have identified that one of us was, in fact, working with the Assessment Standard at that incorrect grade level.

This evidence also shows that working with Leaning Outcomes and Assessment Standards requires teachers to link the content of learning to the context of learning as discussed in section 2.2.3. Focus group discussions with the other two teachers indicated that they thought the Learning Outcomes had been adequately achieved by the learners, while the analysis above shows that this was not necessarily the case (see chapter 4). Teachers were convinced that the Learning Outcomes and Assessment Standards have the potential to make learning meaningful to a learner in context, but there was some evidence that this was mis-interpreted (particularly in the case of the Grade 8 lesson). Working with the Learning Outcomes and Assessment Standards helped us, as teachers, to produce learning activities for different learners and to focus on what the School Environmental Policy required, which was to work with identified issues in the context of the NCS. The Learning Outcomes and Assessment Standards created an opportunity for us to design a learning framework that promotes active learning, but evidence from the analysis above suggests that we could have done more to ensure that the learning processes were designed at the appropriate level, scope and depth (particularly the Grade 8 lesson).

The Assessment Standards in the different Learning Areas helped us, as a group of teachers working together, to interpret the environmental focus in the Learning Area, and to integrate. However, the analysis above shows that the Assessment Standards used should be appropriate to the specific grade, and should be carefully interpreted by the teacher when planning lessons, and when assessment is undertaken.

In the old education system the syllabus was pre-determined and structured according to content. Teachers had little opportunity to engage in the curriculum development processes. The new curriculum framework requires teachers to become more actively involved in developing Learning Programmes, Work Schedules and Lesson Plans using Learning Outcomes, Assessment Standards and Principles. These Learning Outcomes provide opportunities for learners to develop many different skills such as making judgments, doing research, making decisions and thinking critically (Lotz et al., 1998; DoE, 2002a). Outcomes-based education embodies a process of lifelong learning with outcomes that should be achieved at the end of the learning process. Continuous assessment based on a criterion-referenced approach to assessment, is used to monitor learner achievement and progress. It focuses each learner on reaching his/her potential. To progress, a learner has to demonstrate skills, knowledge and values described in the Learning Outcomes (DoE, 2002). Learning Outcomes and Assessment Standards indicate progression from grade to grade, and are meant to ensure that activities will not be superficial, and that the required level of knowledge and skills are developed. This further ensures that learning activity tasks progress from grade to grade and that 'high knowledge' and 'high skills' are developed through the curriculum (DoE, 2002b). As shown in this case study, this requires careful planning by teachers, especially giving careful attention to activities that are focused on the intention of the Assessment Standards at different levels, and assessment tasks that assess learning according to the Assessment Standards.

5.6 ANALYTIC STATEMENT 4

The active learning approach promoted enquiry in lessons

As stated in the School Environmental Policy development discussions (see section 4.2), it was our intention to support active learning processes. As described in section 4.2.2, I provided support to the parents and other teachers to consider an active learning framework. In all the lessons learners were able to participate actively in the lesson by asking and answering questions, reporting back, sharing information and drawing up action plans. As discussed in section 2.3.2.2, the active learning framework explains that one of the principles of active learning is enquiry (investigation). The study indicates that all three lessons were planned with an intention to promote enquiry (see sections 4.4, 4.5 and 4.6). There was a space for

learners to ask questions and analyse information and practice. For an example in lesson 3 learners were given an opportunity to design questionnaires and ask questions to residents. In lesson 1 learners collected different kinds of waste, after they sorted it and, through use of the audit sheet, they engaged in critical analysis. Learners used mind maps to investigate what the problem was and where the problem originates.

Table 5.4. Active learning processes promote enquiry

Active learning processes (section 2.3.2.2)	Mobilising prior knowledge	Finding and using information	Undertaking enquiries	Taking action	Reporting
L1	Answering questions regarding kinds of waste from home and school.	Filling in the audit sheet and plotting it in a graph. Classifying the waste.	Collected different kinds of waste. Recorded findings.	Design and make an animal. Make paper. Plan to involve the rest of the school reduce waste.	Strategies towards management and waste reduction.
L2	Ask learners about the use of the calabash and to identify vegetables.	Learners counting and adding. Counting compost heaps and seedlings.	Estimate their harvest.	Planting the seedlings. Measuring the food garden using different instruments.	Reporting on their answers when adding up seedlings, counting compost heaps and measuring the plots
L3	Brainstorm what they think about waste around school, home and community.	Finding out who is responsible for waste problems. Reading the story about the dump site. Information from the audit sheet.	Classified waste. Enquiry about the least and the most waste in the school. Observe the dumping site, and express their feelings. Design questionnaire for the residents' interviews.	Designed ways of solving problems and use plan of action. Write a letter to the Mayor, Ward councillor and ward members. Meeting and addressing community members. Fundraising activities planned. Produced different products from waste.	Reported on their action plan to the whole class. Report on their findings to the ward.

This analysis shows that use of the active learning framework (as discussed in section 2.3.2.2) allowed teachers to plan lessons that foster enquiry. In all the lessons teachers mobilised learners' prior knowledge and set them tasks to undertake various investigations. One element that was not well developed in our lessons was the process of finding and using new information. We could have provided the learners with more information on waste issues so that they could have used this to complete their audit sheet, in combination with the experience they were getting from the activity itself. This would have, for example, helped the learners to better understand the difference between 'renewable' and 'non- renewable' and sources of waste (see figure 4.9). The analysis also shows that different kinds of action taking are possible, as are different kinds of enquiries. As discussed in chapter 4 (see section 4.4), active learning processes, particularly when group work is over-emphasised, can lead to a loss of learning opportunities for learners, when they are not given adequate time and materials to engage with reading and writing activities at an individual level.

5.7 ANALYTIC STATEMENT 5

The School Environmental Policy and active learning processes contributed to school improvement and work towards a healthy environment

In both lessons 1 and 3 Lesson Plans, teachers developed a series of activities that enabled the learners to do things that would contribute to school improvements. For example learners in lesson 1 analysed an audit sheet in order to identify actions that could lead to a healthy school environment. They came up with a recycling programme for the whole school and some recycling projects (paper making and the making of a structured animal) for their class. Learners were able to analyse and justify which waste was most prevalent at school, informed by the data in their graphs. They were able to draw on this knowledge when they visited the dumping site. They were able to make informed decisions when developing a plan of action to guide how they would work together to share responsibility for improving the school and the community.

The study shows that Grade 5 learners (lesson 1) developed a signpost to warn the rest of the school that they should be responsible for their waste and keep the school environment healthy. The grade 8 class (lesson 3) voiced their views in letters to the Mayor and ward councillor and in interviews with the residents. They stressed their

intentions of cleaning up the area and how they would appreciate it if the residents keep it clean. The educators' Lesson Plans all contributed to the development of knowledge, skills and values that are needed to establish a healthy environment in schools and communities. In lesson 2 learners contributed to the school food garden through planting new plants.

NEEP-GET (2004) indicates that many South African schools need to improve the school environment, to make the environment healthier and more conducive for learning. NEEP-GET (2004) states that taking positive action for a healthy environment will enable learners to develop a sense of ownership and pride in their school and community and, as shown in this study, this can be done through teachers interpreting the Learning Outcomes, Assessment Standards and the content outlined in the NCS (R-9). Experience in the NEEP-GET indicated that teachers can develop Lesson Plans that draw on community knowledge and experience to strengthen and extend learning, and "co-operative relationships can be built between the school and community" (NEEP- GET, 2004:59) so that lessons can also contribute to school improvements:

> ... schools are the place where learners spend a large part of their day. Many schools in SA are in desperately in need of school improvements to make the environment healthier and more conducive for learning. Taking positive action for a healthy environment will enable learners to develop a sense of ownership and pride in their schools... school improvement actions all contribute to the development of knowledge, skills and values that are needed for establishing a healthy environment in schools and communities.
>
> NEEP- GET (2004: 57)

5.8 ANALYTIC STATEMENT 6

The School Environmental Policy encouraged educators to address school community environmental issues and build stronger links with parents

The NEEP- GET (2004:59) notes that:

> ... environmental issues and risks are often context-specific. They affect the lives of the learners in school as well as the community members. Often it is difficult for learners to resolve or address environmental issues in the communities and they may need the help of the key members of the community. Involving community members in some of the Lesson Planning activities is one way of fostering better school-community links.

The study indicates that during the development of the School Environmental Policy educators and parents developed a policy that would allow teachers and learners to address identified contextual issues. Therefore in our planning of lessons we thought of planning and implementing lessons that could contribute to the improvement of the school environment. Educator 1 identified the issue of waste in the school context. From lesson 1, it emerged that the recycling project undertaken by the grade 5 learners could include the whole school. Community members and parents also took part in school recycling by sending waste to school such as egg boxes, newspapers, cereal boxes, plastic and 2-litre coke and milk plastic bottles. In my lesson, I did not focus on environmental issues, but rather on 'environmental processes' (growing plants) but this lesson had a contribution to make to sustainable development e.g. poverty related issues such as food security. Educator 3 identified issues of unhealthy waste practices in the community, and from this lesson learners suggested monitoring and evaluation strategies for the dumping of waste in the community. Learners wrote letters to the mayor, ward councillor, read their action plan to the residents and talked with municipal workers to strengthen the working relations with the community. The School Environmental Policy contributed towards improved school community links (see section 4.3.3.1).

There were, however, other opportunities for parental involvements that were not taken up. In Lesson 2, I could have included parents in the lesson, in doing so, I would have involved parents in the food garden and they would have been able to see how this resource is linked to the curriculum (able to be part of their children's learning process). This involvement could also have helped them to gain skills they could use back in the community.

While not all the available opportunities were used to strengthen parental involvement, this study has illustrated how identified school – community issues can be addressed through lesson implementation. Morris *et al.* (2000: 175, as cited in Dillon et al., 2003) supports the finding that some school garden programmes have demonstrated substantial increases in community and parental involvement. These increases have been linked with improved motivation, pride in the school and its locality, as well as increased leadership skills, sense of responsibility and respect for others.

In section 2.2.4 I mentioned that in the contextual profile I developed for Makana Public Primary School I had identified a lack of parental involvement in school

endeavours as an issue that needed attention in our school. Davidoff and Lazarus, (2003); and the Imbewu programme (DoE Eastern Cape, 1999 as cited in Lotz-Sisitka et al., 2004) argue for a whole school development process that involves parents and community members, and noted that this has been highlighted in South African transformation discussions. According to the DoE (2005) involvement of parents and the wider school community is important in curriculum management as school and communities need to work together to set priorities for learning actions. This study has shown that School Environmental Policies and management plans have the potential to initiate contextualised Lesson Planning, which can also contribute to better school management and school improvement plans (see also Lotz-Sisitka et al., 2004:10). This process when developed with parental involvement, also has potential to strengthen "links with the community and may also encourage community members to become involved in school projects, as these projects work towards the improvement of schools' resource use and management" (ibid). The DoE advocates that schools that encourage parent's active involvement are more effective than those do not (Imbewu, 1999). Involving parents also has the potential to enable community members and parents to learn valuable skills, which can be used in homes and the community.

Many active learning projects such as those developed in this case study, encourage schools, parents and communities to be involved in gardening projects, recycling projects and also in clean-up campaigns. As shown in this study, involving parents can strengthen contextual interpretations of the NCS (R-9). According to NEEP- GET (2004), teachers can therefore develop Lesson Plans that draw on community members to strengthen and extend learning, and co-operative relationships can be built between the school and community. This can be done by interpreting the Learning Outcomes, Assessment Standards and the content outlined in the NCS (R-9) in relation to the context of learning, as discussed in chapter 2.

5. 8 CONCLUDING SUMMARY

This chapter has reviewed and discussed the findings that were reported in chapter 4, in relation to the research question. I have looked at the contents of the School Environmental Policy and carefully analysed how the policy was related to active learning in the context of the NCS Learning Outcomes and Assessment Standards in the case of the three lesson plans. I have discussed how this policy has contributed to active learning in the NCS through a set of analytic statements as suggested by

Bassey (1999). This has helped me to establish the main findings of the study, and to conceptualise and describe the potential relationship that can exist between School Environmental Policies, active learning processes and the NCS Leaning Outcomes and Assessment Standards, which was the research question I was addressing in this study.

The research confirms that teachers and parents and the wider community were all involved in School Environmental Policy development process that is locally specific and relevant. The experience of participating in developing and implementing policy is valuable in a society striving for democracy (Le Roux, 1999:9). If an ethos of policy participation can be started at school, learners may experience of being responsible citizens and may also be encouraged to contribute to policy processes later on in life too. Parry and Scott (1997 as cited in Le Roux, 1999) indicate that an environmental programme is more likely to be effective as a "partnership inside a community" and this study has shown that a School Environmental Policy development process, when considered in the context of the NCS, can enable the development of such partnership between learners, teachers, parents and the broader community while addressing the curriculum requirements.

It has been noted that School Environmental Policies create opportunities for better links with the local community, especially parents who can play active roles in supporting various aspects of a School Environmental Policy such as recycling projects or other action projects in the school grounds (Bellamy, 1995). My own experience within the study also provides evidence that working collaboratively with other teachers, and getting support from the whole school can enrich the process greatly.

This chapter has also reflected on the importance of considering the curriculum requirements for learning when working with School Environmental Policies in schools, particularly the Assessment Standards. This is necessary to ensure that learners are learning at an appropriate level as required by the progression framework of the Learning Areas. Another dimension that has come out of the study is the possibility that active learning processes, when too oriented towards group work, can deny learners valuable learning opportunities when they are not able to write and read individually.

In the next chapter I will summarise my study and make recommendations for the use of School Environmental Policy such that it contributes to active learning in the context of the NCS (R-9). I will also review the research process and make recommendations for further research.

CHAPTER 6
SUMMARY AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter provides a summary of the study, addressing the research question and goals. It then makes recommendations within the case i.e. to Makana Public Primary School and also indicates areas that require further research. I also review the research process, providing a reflexive comment at the end of the research process.

6.2 SUMMARY OF THE STUDY

This study was aimed at developing a School Environmental Policy that can contribute to active learning in the context of NCS (R-9) in my school. This study was influenced by various contextual issues which included poverty, environmental degradation, sanitation. HIV/AIDS, unemployment, lack of parental involvement and the fact that there is not much evidence of team work amongst educators in the institution (see section 1.2, chapter 1). All of these contextual factors influenced and shaped the study and the way it was designed.

In trying to answer the research question I used a participatory action research approach (see chapter 3). As a practitioner working in the school, I sought to understand human experience (actual learning) as a means of changing the world as I explored the potential for a School Environmental Policy to support change in active learning in the context of NCS (R-9) in our school.

In setting up the study, I started with a participatory process for developing a School Environmental Policy that would enhance active learning in cycle 1. As discussed in section 4.2, I realised that the school and the entire community is faced with issues and risks that need immediate attention. Through a deliberation on the contextual issues I convinced staff members that it would be wise to include parents in our committee to address a key issue identified in an earlier contextual profile which found that there is a lack of parental involvement in the school (Mvula Jamela, 2004).

Development of the School Environmental Policy took the form of a workshop. Commissions were formed where they had to answer two questions. The School

Environmental Policy had objectives of working towards the improvement of the school environment, and setting a framework for active learning in the school. After considering the discussions in the workshop, the School Environmental Policy was developed (see figure 4.3). This process is reported as cycle 1 of the action research process (see section 4.2).

Cycle 2 of the action research process was informed by what emerged in cycle 1. We gathered together as three educators from three different phases. The main focus of the process was to develop Lesson Plans that have a focus on environmental learning, which also enables active learning and acknowledgement of learners' prior knowledge (see section 2.4), and which address the objectives of the School Environmental Policy. We all agreed that lessons should be taken from 3 different Learning Areas to illustrate and implement. We took the policy document and identified Learning Outcomes that were appropriate for engaging with environmental concerns relevant to our School Environmental Policy in each of selected Learning Areas (see chapter 4 and 5).

Employing a participatory action research approach provided an opportunity for the research to contribute to our professional development and active learning. This was achieved through the process of School Environmental Policy development, Lesson Planning, and lesson implementation and reflections. This process provided an opportunity for us as teachers to improve our roles through our reflections on the process, and learners' roles in the teaching and learning process, through our focus on active learning.

I was a participant observer in the research, and was involved in collaborative planning for, and observations and reflections on three lessons in three different phases (see section 4.3). During all lessons I took notes on the proceedings of the lessons using observation schedules and a journal. After each lesson I conducted semi-structured interviews, and after all the lessons I conducted a focus group discussion with my colleagues. I then considered the main themes in the data, and reported each of the lesson processes in detail in chapter 4. Through development of a set of analytic statements, I was able to discuss the data in chapter 5. I also made use of these analytic statements to develop recommendations for the study (see below).

To document the process in the context of Makana Public Primary School case study, I employed a range of data collection strategies such as focus group discussions, participatory observations, workshops, semi- structured interviews, reflective journal, photographs, observations and document analysis.

6.3 RECOMMENDATIONS

Recommendations will be based in the analytic statements that were discussed in chapter 5. The recommendations also are based on the case study undertaken in Makana Public Primary School, and are therefore mainly relevant to this school context, although they may provide useful insights for others researching School Environmental Policies in the context of the NCS (R-9).

6.3.1 Recommendation 1: *Use the School Environmental Policy to further the planning of active learning processes*

This study has shown that a School Environmental Policy can further the planning of active learning processes in a school, particularly when combined with pedagogical models such as the active learning framework discussed in section 2.3.2.2. This study has also shown that the School Environmental Policy helps educators to define contextual relevance in relation to Learning Outcomes and Assessment Standards.

I would like to recommend that Makana Public Primary School continue to use the School Environmental Policy to further the planning of active learning processes, and that this is done by considering the other recommendations provided below.

6.3.2 Recommendation 2: *Ensure that the School Environmental Policy and the active learning approach are consistent with OBE policy and philosophy*

This study has shown that the School Environmental Policy and the active learning approach are consistent with OBE policy and philosophy. The active learning approach allows for the constructivist orientation of the curriculum to be developed by teachers and learners, while the School Environmental Policy allows for contextualising of the curriculum, and for the building of school-community relationships. These are all consistent with OBE policy and philosophy.

I would like to recommend that the Makana Public Primary school continue to ensure that their work with the School Environmental Policy and active learning approaches are consistent with OBE policy and philosophy. This will require careful planning and working with the NCS (as discussed below).

6.3.3 Recommendation 3: Improve and strengthen the process of *working* with Learning Outcomes and Assessment Standards

This study has shown that the work with the School Environmental Policy and active learning approach has also strengthened use of Learning Outcomes and Assessment Standards. Evidence in the study shows however, that Assessment Standards are complex and tend to be poorly understood. Their role in ensuring that learning is achieved at appropriate levels of scope and depth was not well understood by the teachers at the time of implementing the lessons. We worked mainly with the Learning Outcomes, and less specifically with the Assessment Standards.

I would like to recommend that Makana Public School pay more attention to the knowledge, skills and values embedded in the Assessment Standards, and that we plan lessons that are at the appropriate scope and depth, as defined by these Assessment Standards to ensure progression of learning. I would specifically like to recommend that:

- The Assessment Standards used should be appropriate to the specific grade.
- The skills, values and attitudes that are developed in the lesson should be consistent with (but can be broader than) the Assessment Standards used in each lesson.
- Teachers should check if their planning is consistent with the grade requirements.
- Teachers should assess learning according to the Assessment Standards

6.3.4Recommendation 4: Critically consider how the active learning *approach* can promoted enquiry in lessons.

This study has shown that the active learning approach can promote enquiry in lessons. This is, however not always a necessary dimension of environmental learning, as shown in the activities undertaken in the school garden. The study has

also shown that the active learning approach may also lead to a loss of valuable learning opportunities, particularly for learners to develop their reading and writing skills, as too much can be left up to 'groups' of learners.

I would like to recommend that Makana Public Primary School use active learning approaches critically, and that they use enquiry when needed. I would also like to recommend that teachers carefully consider reading and writing opportunities available to learners, and that more individual reading and writing can be encouraged, even in group work activities.

6.3.5 Recommendation 5: Strengthen the potential of the School Environmental *Policy* and active learning processes to contribute to school improvement and work towards a healthy environment.

This study has shown that the School Environmental Policy and active learning processes can contribute to improvement and work towards a healthy environment.

Given the condition of our school environment, which is in need of improvement, I would like to recommend that Makana Public Primary School continue the process of designing lessons and activities that contribute to school improvement and a healthy environment. These lessons should, however, be consistent with the NCS requirements (as outlined above), particularly the Assessment Standards.

Recommendation 6: Strengthen the potential of the School Environmental *Policy* to address school community environmental issues and build stronger links with parents

This study has shown that working with a School Environmental Policy can assist with a process of addressing school community issues, and it has the potential to build stronger links with parents, although this study did not deal with this aspect in great depth.

I would like to recommend that Makana Public Primary School continue to use the School Environmental Policy development and review process as a means of involving parents. Parents can also be involved in the various teaching activities (e.g.

the school food garden teaching activities, school-community waste management activities etc).

6.4 REVIEW AND IMPROVEMENT OF THE SCHOOL ENVIRONMENTAL POLICY

This research has provided useful insights that could inform a review of the School Environmental Policy. For example the following key issues can be considered when reviewing the School Environmental Policy:

- The *critical* use of active learning approaches, so that they strengthen the quality of learning could be included in the School Environmental Policy,
- A statement that learners should be given more opportunities for individual reading and writing when involved in group work,
- Assessment Standards and their use should be emphasised in the policy,
- The role of the policy in defining the context of learning could be emphasised,
- A stronger role for parents could be included in the policy statement,
- More specific detail on what school environmental issues need to be addressed could be included (which would give teachers a wider choice of focus areas for lesson planning), and
- The concept of collaborative lesson planning could be included in the School Environmental Policy.

The current School Environmental Policy clauses focus mainly on active learning approaches, silencing other important aspects at school. For example, it does not give an indication of how other stakeholders, particularly the learners, participate in the process of defining the School Environmental Policy priorities. Similarly, the School Management Team's role is not clarified.

In conclusion, I would like to recommend that Makana Public Primary School revise its School Environmental Policy in the light of the findings generated by this study (as outlined above). In this process, I would like to recommend that the School Environmental Policy not be treated as a 'stagnant' phenomenon, but that a regular review process is established for the School Environmental Policy. Stakeholders not currently mentioned, such as learners and the School Management Team, should be

actively encouraged to participate in the process of revising the School Environmental Policy, and in investigating issues that need to be addressed in the school. A curriculum team could also be established to ensure that the NCS is appropriately linked to the School Environmental Policy processes and activities.

6.4 REFLECTIONS ON THE RESEARCH PROCESS

I have found the process of being a researcher, while being practically involved in the research process, to be an ambivalent process. This is informed by the fact that it is difficult to separate yourself as a researcher and a participant at the same time. Consequently, I have had to be very conscious of how my role has influenced the results of the study.

Being involved in the outgoing 'action' of an action research process also makes it difficult to reflect critically on what is happening, as we found when working with the Assessment Standards. We only noticed our limitations of working with the Assessment Standards later on in the process, when I started with a more critical analysis of the data and in discussions with my supervisor. Action research processes can be strengthened by interacting with critical friends (e.g. supervisor or others) who are interested in the research, but who are not directly involved.

I found it easy to convince my colleagues and the parents in our school to undertake this process of research because we are faced with the challenges of implementing the NCS. Teachers were very keen to learn because this process assisted in implementation of the new curriculum (NCS) and addressed issues relevant to our school-community, As mentioned before, educators were perceived as OBE "phobic", and through the study they clarified some of the problems they were experiencing and subsequently felt relieved and empowered. I also found it useful to work across the different phases because it highlighted the important issue of progression in learning. The process has also enabled us to make sense of the relationship between content, context, Learning Outcomes and Assessment Standards in OBE.

According to my observations the study played a pivotal role in our professional development because we, as a group of educators, learnt many lessons regarding implementation of the curriculum such as how to relate content and context when developing and teaching Lesson Plans, interpretation of Learning Outcomes and Assessment Standards, situating environment in different Learning Areas, and

curriculum planning in teams. The study has also taught us to focus more carefully on Assessment Standards when planning and assessing learning, and to be more conscious of creating opportunities for every learner to read and write during group work activities. The study has further contributed towards improvement of the Makana Public Primary School Environmental Policy and improvements and changes in the environment.

6.5 CONCLUSION

This chapter has briefly summarised the study, and has identified the main recommendations that can be made from this study. In this study I investigated how a School Environmental Policy can contribute to active learning, address school improvement needs and strengthen community links while implementing the requirements of the NCS (R-9) This study has shown that School Environmental Policy work can be closely associated with and can enhance curriculum work in a school. I have also provided recommendations that could support environmental learning and active learning in the context of NCS (R-9) implementation.

This study has shown how this work, as described by Rickinson et al. (2004) allows students participating in School Environmental Policy projects to develop a greater 'real-life' awareness of environmental issues and also to develop practical solutions to solving them. Processes such as these enable learners to develop the insight and competence necessary for making better environmental management and life-style choices. As noted by Lotz-Sisitka and Raven (2001:94) preparing learners to develop the competences to address environmental issues "... requires knowledge and skills best developed through active learning, critical thinking, involvement in real issues encountered in learners' immediate environments". This study has shown that the NCS Learning Outcomes and Assessment Standards also need to be carefully considered when planning for these active learning encounters. It has provided valuable insights that can inform a revision of the Makana Public Primary School Environmental Policy, and ongoing implementation of the NCS in the school.

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APPENDICES

Appendix 1

12. May 2005

Development of the School Environment Policy

Today we are expected to develop SEP that will have a clause that will focus on **active learning** approach to learning.

- When you see the word ***active learning*** what comes to your mind?

- Participants doing things practically
- Learners working with one another
- Helping one another
- Write down words as many as you like about ***active learning***.
- Learners interacting with others when learning.
-Critical reading and thinking
- Hands on
- Analyse
- Scaffold
- Interaction
- Mediator of learning
-solving problems
- finding solutions

- How can we design this SEP such that it promotes **active learning** approach?

- Policy that bring about better management of the environment
- Involving learners in context issues and risks
- Expose learners to learning that they will be able to interact with
- Take into consideration the importance of the link of the environmental focus in curriculum policy.
- Involvement of the school stakeholders.
- Develop strategy towards addressing schools environmental needs and find ways of improving them

Appendix 2

CYCLE 1 OBSERVATION SCHEDULE

1. **RESEARCHERS' DETAILS**

Name: Lungiswa Gwen Mvula-Jamela
Designation: Educator
Date of observation: 12 May 2005

2. **SCHOOL INFORMATION**

School name: Makana Public primary School
District: Grahamstown
Facilitator's name: Ms L. G. Mvula-Jamela
Language: English and Xhosa

3. **THE OBSERVATION ENVIRONMENT**

3.1 How participants are deliberating in groups towards Active learning?
They are contributing but to some extent, they seem to be not quit aware what AL is a all about, but after clarified parents were eager that they want to be part.

3.2 How participants are responding to questions?
Very enthusiastic and relevant to the topic

3.3 How is the School Environmental Policy committee formulated?
Firstly constituted by educators only. Then was discussed in the first Environmental committee meeting (8/03) to incorporate interested parents

3.4 How commissions are formed?

Where made up of 3 parents and 3 teachers each.

3.5 How are the participants concerns for Active learning in the policy?
Parent were helped by the facilitator and educators to understand the discourse On active learning approach, and what the curriculum anticipates.

3.6 Who is dominating in discussions?
Teachers, but in consultation with parents and reach consensus at the end.

3.7 What is the research's role?
Asking leading questions and clarifying where needed, moving from group to group. She also summarised all the deliberations and resolutions of the workshop. She helped up in the development of the School Environmental Policy that will contribute to planning; implementing AL lessons and also work towards the improvement environmental issues through AL approach

3.8 Who will be taking notes?
The meeting agreed on Mrs Lubelwana to be the scriber

3.9 How are the teachers helping parents to understand what is expected from them?
Answering questions regarding AL in commissions

Appendix 3

19 June 2005

FOCUS GROUP DISCUSSION SCHEDULE (AFTER PLANNING SESSION)

1. How do you view the planning session we have done considering the way we used to plan lessons? Made us to understand the RNCS way of ~~planning~~ learning, learners participation in learning gain new knowledge in planning and we gained confidence. we feel proud that we are deeply involved in planning

2. Has the planning helped you to improve active learning"

T.1 Yes, because learners will learn how to live in a healthy environment

T2. Learn about recycling processes, learners actively clean their community & surr

3. Were you considering active learning when planning lessons?

T1. Not before we planned with you.

T2 we were just planning not considering the learners role in the process of teaching and learning

4. How is the planning going to assist you in implementing RNCS requirements?

T1. Start of implementing AL approach with our learners actively involved.

T2 Showed that RNCS can be implemented successfully.

5. Can you comment on Learning Outcomes and assessment standards

T.1 Planning accommodated the integration of LO to all LA's

T.2 We chose LO that has an environmental focus so that we intensify our SEP

6. Does AL solve environmental problems, if yes How?

T.1. Yes because cleaning environment, investigate issues and risks, discuss and solve problems and monitor the situation and keep the environment clean.

7. Are there any lessons that can be developed to help you to explore more active learning approach?

T.2 Yes, Language - learners will be engaged in dialogues, read, write and discuss environmental problems

8. Does active learning approach encourage more discussions to teachers during planning

T.1 Yes, when we were to come up with different strategies to lessons

T Yes, during integration process and when we chose LO's AS

9. How does the SEP development helped in the planning of lessons?

T.1 All that we regarded as our contextual problems was supposed to be addressed through lesson planning

T.2 It was easy to choose our topics - so that they address the immediate problems in our school

10. How are these lessons going to help school ?

T.1. To improve the status the ~~our~~ school is at

T.2 To ~~make~~ put learners central in the process of teaching and learning.

Appendix 4

LESSON 2

LESSON OBSERVATION SCHEDULE

1. RESEARCHERS' DETAILS

Name: Lungiswa Gwen Mvula Jamela
Designation: Educator
Date of observation: 23 June 2005

2. SCHOOL AND EDUCATOR INFORMATION

School name: Makana Public primary School
District: Grahamstown
Educators' name: Ms L. G. Mvula Jamela
Grade observed: 2
Learning Area: Numeracy
No of learners: 19
LoLT: English
Language of learners in class: Xhosa
Geographical location: Urban area
What resources were available?: worksheets, posters, beans & pumpkin seeds, lead pencils, strings, measuring tapes, buckets, crayons, compost and calabash.

3. THE LEARNING ENVIRONMENT

	Insufficient	sufficient	Highly sufficient	Not applicable
3.1 Is the classroom tidy?			✓	
3.2 Desks are suitable for flexible learning activities			✓	
3.3 General comments:	Learners were grouped in such a way that the educator could move freely to each group facilitating & scaffolding learning where needed			

4. METHODOLOGY

4.1 Educator gives clear instructions:
The educator did clear instructions in a simple language - A little bit of code switching was

4.2 Principles of outcomes are emphasised:
Principles of outcomes emphasised. Activities were set and planned to achieve the learners outcom

4.3 Activities are relevant to the outcomes:
2 Activities were relevant to the outcomes - Activities learner-centred and learner friendly

4.4 Activities are relevant and applicable to real world context:
1 Activities relevant and based on daily living things

4.5 Activities are extended beyond learners' immediate context:
Learners were able to link with their prior knowledge

4.6 Educator encourages learner activity:
Learners were encourage to participate & ask questions

4.7 Educator encourages learners to express their own ideas and values"
Learners were engaged on hand & hand on activities

4.8. Integration of learning is evident:
There was too much learning area integration e.g Natural Science & Language

4.9 The integration strengthening environmental learning
Learners were able to count as well as to plant the [illegible]

4.10 Educator facilitates a process of active/ peer learning:
Peer learning was emphasised learners could read & write each other records of measurement

5. GENERAL

5.1 What is the educators' role in the learning setting?
A facilitator a scaffolder a motivator observer and an initiator in the learning setting

5.2 How is the new knowledge introduced into the learning process?
Prior knowledge asked first using [illegible] approach of learning & teaching, learners were able to acquire new knowle[dge]

5.3 What is the role of learners in the lesson?
They were full participant and learner centered in the whole process

5.4 How is the learners' prior knowledge used?
Learners were asked about their prior knowledge. Out of their knowledge they could [illegible] what needs to be added their next knowledge

5.5 Does the lesson consider the learners context of learning (Explain)
The educator used the activities that are learner friendly, [illegible] language, they made things to make them [illegible] & think

5.6 What are different teaching methods employed in the lesson?
Pattern method, learners worked cooperatively in their groups. Peer learning & individual methods were [used]

5.6 How would you view learners' participation?
Learners were participating actively. Talking freely showing interest as they were working in groups

5.7 How are the material used to support learning?
Materials were used effectively & learners were able to follow instructions and do what was expected to do

5.8 Does the lesson create opportunities to develop knowledge skills and values?
Learners know how [illegible] planted, they value nature & environment

5.9 Does the integration help to develop lesson ideas to create meaningful, challenging learning experience?
Learners were able to count, measuring, communicating and reading, writing, they acquire new knowledge and experience through the activities they did

Thank you very much for your time

Appendix 5

Rhodes University
Where leaders learn
P. O. Box 94 Grahamstown. 6140. Tel: (046) 637 0454, Cell: 0835156627, Email:mvulagwen@yahoo.com, g98j0001@campus. Ru.ac.za

To: Dear SGB, Headmaster & Staff
From: Lungiswa Gwen Mvula Jamela
Issue Date: 06 February 2005
Matter: Requesting access to conduct a case study

Dear Sir

I am a Master's student of Education at Rhodes University, Grahamstown and I have an interest to undertake a research from your school as a part of my course requirement. This letter serves as to gain access for conducting the research in your institution, and this will take certain duration of 2005.

My research topic is" **How a developmental of a School Environmental Policy can contribute to active learning in a context of NCS (R-9)"**

I therefore would like to invite you to participate in a master's research project. This study will focus on selected parents and educators in an attempt to look positively at whole school improvement. I will be choosing 10 parents and 2 educators to conduct interviews and observe lessons.

The data collected will be treated, as confidentiality and anonymity will be maintained. The data and analysis will be feedback for comments as part of the research process. I would appreciate if you answer questions with honesty.

I thank you in anticipation

Yours humbly
Gwen

Appendix 6

11 May 2005

School Environmental Policy meeting held @ Makana Public Primary school.

Chaired by: Ms Mvula-Jamela (Environmental Committee task team co-ordinator).

Present: All members of the committee including parents component, Makana staff and the SMT.

Meeting Agenda

1. Opening and welcome - by convenor
2. Credentials by Ms Zono (committee secretary)
3. Business of the day.
4. Closure

1. Opening and welcome

- Ms Mvula Jamela welcomed all present and highlighted the importance of developing the SEP that will assist towards professional development and curriculum improvement and implementation.

2. Credentials - dealt with by Ms Zono.
   - 1 apology Mrs Nkayi.

3. Business of the day

The meeting agreed to elect Mrs Lubelwana to be the scriber of the day.

- Meeting agreed that we use groups and answer prepared questions towards developing SEP.
- Agreed that all people should be involved in the workshop of development of the SEP.

4. Closure

- Meeting closed @ 14h30

Appendix 7 a

MAKANA PUBLIC PRIMARY SCHOOL ENVIRONMENTAL POLICY

We as parents, educators and learners of Makana Primary School will strive towards creating a learning healthy environment that will work towards enhancing active teaching and learning approach with the hope to:

- Plan lessons that promote Active Learning.
- Design learning framework that will promote enquiry to learners.
- Ensuring the success of Active Learning processes through Outcomes-Based Education.
- Use RNCS Learning Outcomes and Assessment Standards that will enhance environmental learning.
- Encourage learners to take charge in identifying environmental issues.
- Improve school environment towards sustainable development.
- Improve, identified environmental issues and work towards a healthy environment.
- Build strong working relations with parents and the entire community.
- Involve learners in campaigns that will create awareness and respect for the environment.

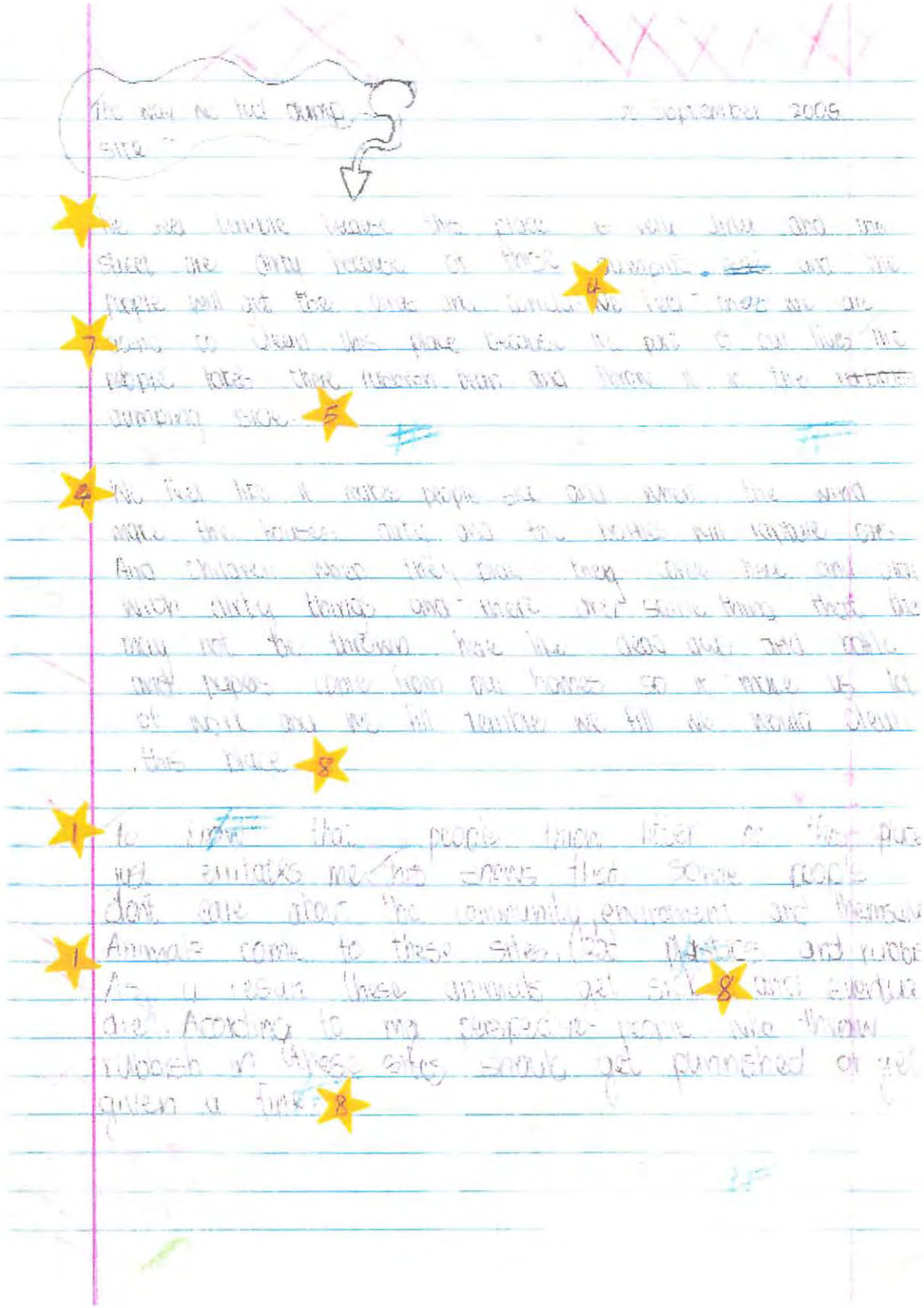
Appendix 7 b

MAKANA PUBLIC PRIMARY SCHOOL ENVIRONMENTAL POLICY

We as parents, educators and learners of Makana will strive towards creating a learning healthy environment that will work towards enhancing active teaching and learning approach with the hope to:

- Plan lessons based on active learning.
- Design learning framework that will promote enquiry to learners.
- Use RNCS learning outcomes and assessment standards that enhance environmental learning.
- Encourage learners to take charge in identifying environmental issues.
- Improve school environment towards sustainable development.
- Improve identified issues and work towards sustainable healthy environment.
- Build strong working relations with parents and the entire community.
- Involve learners in campaigns that will create awareness and respect for the environment.

Appendix 8a



Appendix 8b

N Qwelani 21 September 2005

Grade 8

Action plan

When we see that place we are so worried because it was so Dirty and that rubish it can fly around to these House around the dumping site and the people can get some Virus We were so worried because the people cant set down and elebate some things and we see that if we can clean that place and take all the rubish thing to the Conterner and when that place is clean Municipalaty can get as contomer and and all the rubish can throw in the conter ner no more rubish in the ground

Appendix 8c

Appendix 8d

Works heet 2.

Name..... Grade:..... Date:.....

Name and colour in the following vegetables:

1. Pumpkins

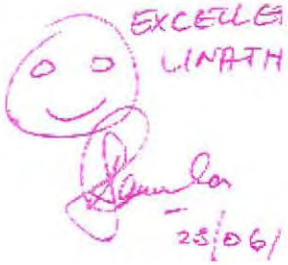


Name ..... Name ..... Name .....

2. Beans



Name ..... Name ..... Name .....



Appendix 8e

Appendix 9

Lesson implementations structured interview (Teacher 1)

What do learners already know?

They know how to litter
They know about wasted & unwanted materials
Who is suppose to manage litter in the community

What do learners need to find out?

How to manage waste
What effects do the waste cause
How to combat waste

Who can we contact for help?

Educators, Caretaker, Night Watchman
Municipality, Community, Learners as well

What can learners do and report?

Dumping sites
Clean dumping site and report to the ward council

Who will investigate the issue?

The learners with the Educator

How would you view learners' participation?

They participated actively answering question with prior knowledge. Work co-operatively in groups

Does the lesson create opportunity to develop knowledge skills and values?

Yes it does. Learners became aware of cause of dumping waste anywhere. They research, observe, analyse a lot about waste and their bad effects. Interact with the LAI

General comments:

The lesson was interesting and stimulating, learners were participating. The educator was active and the planning was based on RNCS where learning outcomes & assessment standards were clustered within and across other learning areas & outcomes. Learners were able to link with Maths, Life Orientation, Technology, Art & Crafts etc. Where in LO - they would learn about diseases, the pollution etc

Appendix 10

Data coding phase 1
CATEGORIES

1. SEP and ACTIVE LEARNING

1.1 PROCESS OF DEVELOPMENT OF POLICY

Participants' deliberations towards ACTIVE LEARNING

Evidence of a concern for ACTIVE LEARNING in policy.

1.2 SEP

How does the policy create opportunities for ACTIVE LEARNING in relation to RNCS outcome?

2. LESSON PLANNING

2.1 How did teachers discuss ACTIVE LEARNING in the planning stage?

2.2 How did the lesson plans reflect a concern for ACTIVE LEARNING?

2.3 How did the lesson link to RNCS?

3. HOW WERE LESSONS PRESENTED TO CREATE OPPORTUNITIES FOR ACTIVE LEARNING? (Observations, learners' work).

3.1 What activities took place?
(a) To mobilise prior knowledge
(b) To share information
(c) To improve the environment

3.2 What were learners doing: opportunities for active learning, and evidence of active learning
(a) Social interactions
(b) Sharing information
(c) Enquiries
(d) Actions

3.3Evidence of learning

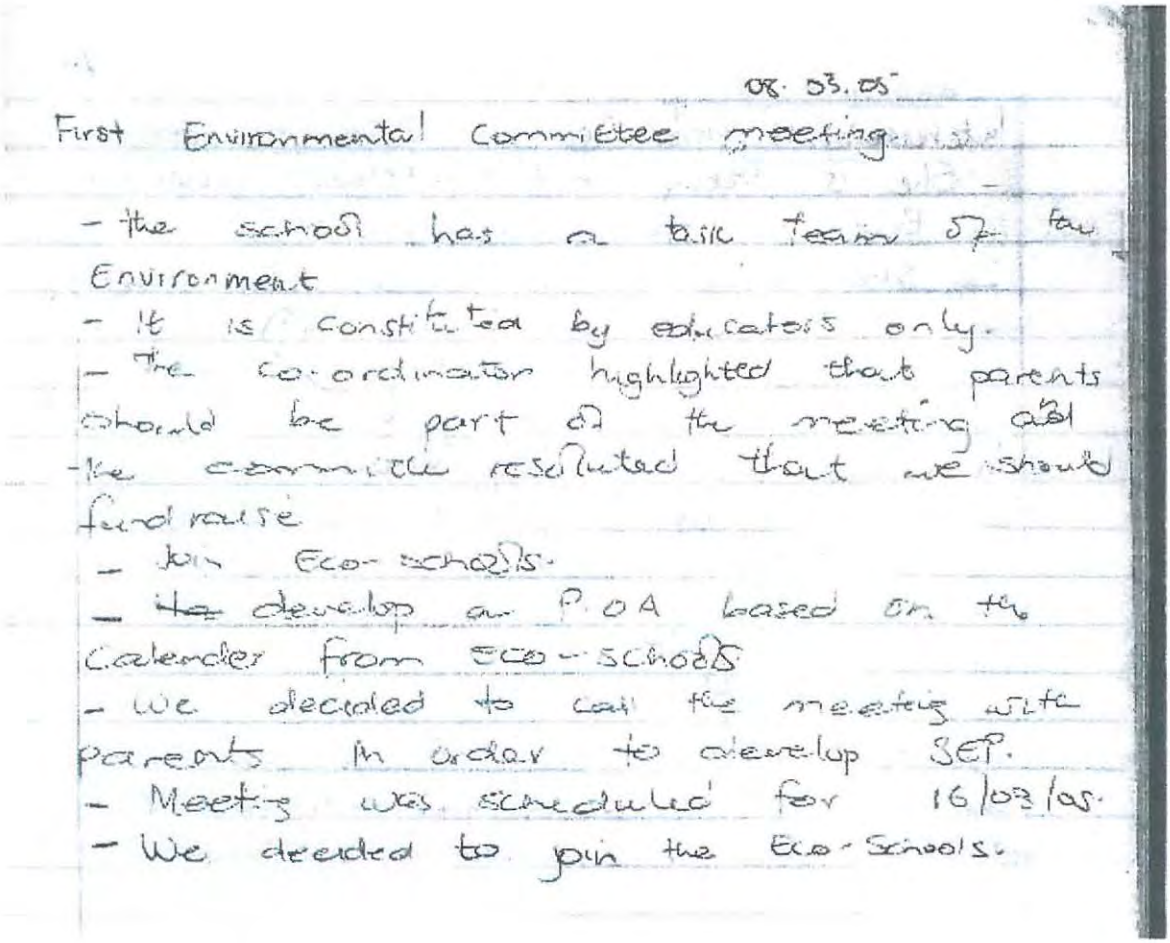
(Skills, knowledge and values).

4. TEACHERS REFLECTIONS ON ALL LESSONS TAUGHT & SEP PROCESS

4.1 Links with RNCS

4.2 Reflections of active learning process.

Appendix 11



08. 03. 05

First Environmental Commitee meeting held

- the school has a task team of for Environment
- It is constituted by educators only.
- The co-ordinator highlighted that parents should be part of the meeting also
- the committee resolved that we should fund raise
- Join Eco-schools.
- ~~to~~ develop an P.O.A based on the Calender from eco-schools
- We decided to call the meeting with parents in order to develop SEP.
- Meeting was scheduled for 16/03/05.
- We decided to join the Eco-Schools.

Appendix 12

WASTE AUDIT

Date: 23 August 2005 Grade: 5

	Play ground	Classroom	Office	Garden	Total
Tins					
Glass bottles	0	0	0	6	6
Plastic bottles	1	5	1	0	7
Chip packets	10	10	0	5	11
Sweet packets	1	1	0	0	2
Sweet papers	22	4	0	2	28
Straws	0	0	0	0	0
Bottle tops	1	1	3	0	4
Paper	16	2	0	4	22
Cardboard	16	0	6	1	22
Plastic	16	3	6	5	30
Total	88	16	15	13	132

Group Members:

1. [illegible] 2. [illegible]
3. [illegible] 4. [illegible]
5. [illegible] 6. [illegible]
7. [illegible] 8. [illegible]

Appendix 13

19 June 2005

FOCUS GROUP DISCUSSION SCHEDULE (AFTER PLANNING SESSION)

1. How do you view the planning session we have done considering the way we used to plan lessons? Made us to understand the RNCS way of ~~planning~~ learning, learners participation in learning gain more knowledge on planning and we gained confidence we feel proud that we are clearly involved in planning
2. Has the planning helped you to improve active learning?

T1 Yes, because learners will learn how to live in a healthy environment

T2 Learn about recycling processes, learners actively learn their community & school

3. Were you considering active learning when planning lessons?

T1 Not before we planned with you.

T2 we were just planning not considering the learners role in the process of teaching and learning

4. How is the planning going to assist you in implementing RNCS requirements?

T1 Start of implementing AL approach with our learners actively involved.

T2 Showed that RNCS can be implemented successfully.

5. Can you comment on Learning Outcomes and assessment standards

T1 Planning accommodated the integration of LO to all LAs

T2 We chose LO that has an environmental focus so that we intensify our SEP

6. Does AL solve environmental problems, if yes How?

T1 Yes because cleaning environment, investigate issues and risks, discuss and solve problems and monitor the situation and keep the environment clean.

7. Are there any lessons that can be developed to help you to explore more active learning approach?

T2 Yes, Language - Learners will be engaged in dialogues, read, write and discuss environmental problems

8. Does active learning approach encourage more discussions to teachers during planning

T1 Yes, when we were to come up with different strategies to lessons.

T Yes, During integration process and when we chose LO & AS

9. How does the SEP development helped in the planning of lessons?

T1 All what we regarded as our contextual problems was supposed to be addressed through lesson planning

T2 It was easy to choose our topics so that they address the immediate problems in our school

10. How are these lessons going to help school ?

T1 To improve the status the ~~[illegible]~~ school is at

T2 To ~~[illegible]~~ put learners central in the process of teaching and learning.

Appendix 14

Journal Entry

GICLE 2

DATE : 23 JUNE 2005

GRADE: GRADE 2. (Foundation Phase).

Reflections on Numeracy (Learning to grow)

How I did the ACTIVITY.

I started the lesson by drawing from learner's prior knowledge. This was done by asking questions from learners such as. What are these that I have in my hands? Learners showed that they know the vegetables in their language and in English. They also know what is the butternut used for in their homes. It is used as calabash (iselwa).

They also portrayed that their understand the relation of the seeds of beans with beans they eat at home, but they did not know the seed relationship of the pumpkin and its seeds.

Learners worked in group to get count seeds and write ~~do~~ in their work sheet. They add the seeds and estimated ~~what~~ how many ~~seeds~~ plants they will have after they planted the seeds.

WHAT I LIKE ABOUT THE ACTIVITY

learners were actively involved answering questions, sharing ideas, counting and adding together, helped each other when writing in their worksheet. The use of resources impact positively in learning because learners could talk and think critically. Learners work effectively together and all participated.

WHAT I DID NOT LIKE

I could not identify learners who could not count nor write because those who can write jumped to write the worksheet on behalf of the group there was no democratic election of the scribe.

IMPROVEMENT

~~I might make a~~

I could have made the counting as an individual activity so that I can identify those who cannot count and help them during the group work.

24. JUNE 2005

Learners worked in groups answering worksheets. They drew from the previous lesson. Now they had to re call the colour of the vegetables and colour them in and underneath each vegetable write names. Some did very well. But those struggling with spellings the teacher showed them the spelling from yesterday's lesson on the board. This was an individual activity.

Appendix 15

Work sheet. 3

Date: 27 June 2005 Grade: 2

What is the measurement of your vegetable bed?

Measure in : 

Length 81 Breadth 50

Measure in: 

Length 45 Breadth 33

Measure in: 

Length 522 Breadth 450

Group members (Names)

1. Aviwe
2. Lukanyo
3. Siya
4. Sinqele
5. Aviwe
6. Simbwo

Good Group working 27/06/05

Appendix 16

Work sheet. 4

Date: 25t June 2005 **Grade:** 2

Count the compost heap

How many 

Answer: 10 litres

Group members (Names)

1. Mpoko
2. Azola
3. Foni
4. Amele
5. Zandile
6. Anda

Good Great

Appendix 17

Unit 2 Investigating a local health problem

In this unit you will read about a group of learners who investigated an environmental health problem. Then you will do a similar investigation in the area in which you live.

A rubbish dump causes health problems

An investigation by learners at Weston Agricultural College in Mooi River, KwaZulu-Natal, has forced the local town council to admit that a municipal dumping site causes environmental problems. The investigation also won the learners a prize in the Green Trust Awards environmental competition in 2001.

The learners first became aware of the problem after reading newspaper articles about how the smoke, water and soil pollution from the dump affected the animals and people in the area.

Burning rubbish at this municipal dumping site in Mooi River created health hazards for the surrounding residents.

"We first went to the dump at the end of March to see for ourselves what it was like and we then decided that something should be done about it," says George Harvey, one of the learners.

The learners found that rubbish from the informal settlement is dumped at the site where it is burned daily. Smoke from the burning refuse drifts over the houses, affecting the people who live there.

Almost all the people interviewed complained about the sharp smell of the smoke which affects their daily life and their health.

Air pollution is not the only problem for the residents living near the dump. Soil and water pollution are also harming the surrounding area. By doing water and soil tests, the learners showed that the pools of water that lie stagnant on the dump contain high levels of dangerous chemicals and pollution from human faeces or 'poo'.

These pollutants, as they are called, flow from a small stream, which runs close to the dump, into the Mooi River where Brunville residents often swim. The people who use the river can easily become ill as a result of the pollutants.

People and animals also get diseases from the rubbish at the dump. The dump has no fence around it, which means that animals can get onto the dump easily, and eat the plastic and other rubbish. People also look for food on the dump.

Parents in the area are also worried about the dagga plants growing on the dump, where many children play. Teenagers have been caught smoking this dagga.

The learners felt that they had to make the local town council aware of their findings on the pollution problems caused by the dump. They told the Mooi River Town Council what they had discovered and expressed their concerns for the local environment.

'The response was very pleasing. It seems that the council has started to take action on the issue,' says teacher [illegible] Nowlan.

The council's decision to take action may also be due to reports on the learners' research in the local newspaper.

The council has agreed that the area needs a safer dumping site that is not too close to where people live. It also needs more modern methods of disposing of waste. It seems that the best solution would be for the council to move the dump, as well as introduce other methods of getting rid of waste.

Adapted from *The Teacher/M&G Media*, September 2001

Activity 8 [Pairs] Investigating the dump site problem

1 Once you have read about how the learners from Weston Agricultural College investigated the problems caused by the dump site, answer these questions:
  a How did the learners first obtain information about the problems caused by the dump site?
  b Identify and list the different sources of data the learners used to obtain more information on the problem.
  c Identify and list the health problems caused by the dump site.
  c What did the learners do to address the problem?
  e What was the result of this?
  f How would you solve this problem?

2 Do you think the investigation was a success? Say why or why not.

Investigating an environmental health problem in your area

Activity 9 [Class] Investigating a local problem

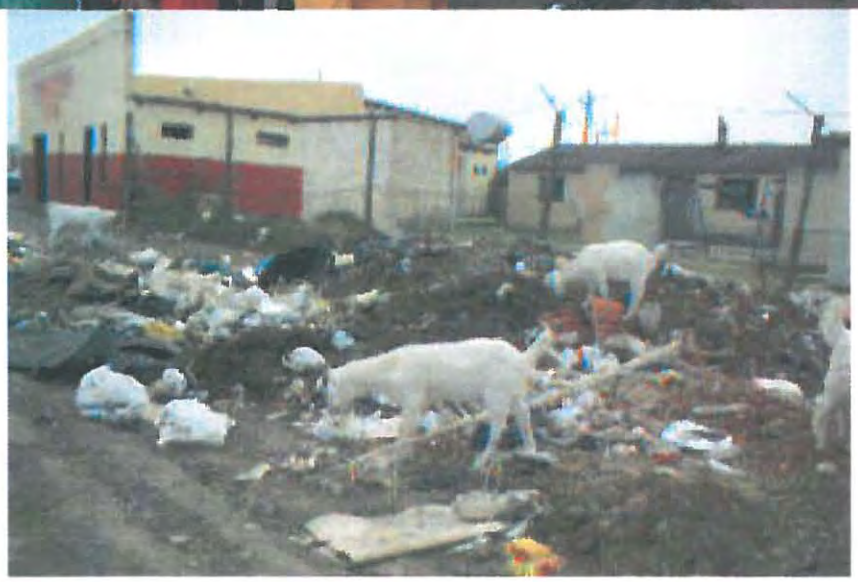
1 Are there any environmental problems in your area that affect people's health? Discuss this question as a class.

2 Identify a local health problem you would like to investigate.
  a Plan how you are going to carry out your investigation. Use the guidelines on pages 14 and 15 to help you.
  b Carry out the investigation.
  c Think of different ways that the problem can be addressed. Choose the best way and write down a plan for addressing the problem.

LO 1 Health promotion
AS Investigates a local environmental health problem using different data sources, and plans a strategy to address the problem

Appendix 18

Appendix 19a



Work sheet 1 (Activity 5) Grade 8

Group Activity

The dumping site you visit is it well maintained or not?

Question	Yes	No	Describe
(a) Wind blow litter on the fences and in the site?	✓		Because air blow the papers and plastic to our yards people throw the dirty things out side the containers
(b) Are there dangerous materials in the dumping site?	✓		The animals here they a eating a rubbish and other animals they dead
(c) Are the animals on the site? If Yes what are they doing?	✓		The is danger things the is bottle of glass and the is ~~glass~~ bricks, wire and old machines.
(d) Are there people on the site? If Yes what are they doing?		✓	
(e) Who dumps in this site?			The people around the community.
(f) Are they allowed to dump? If no how do you know?		✓	Because we see the dead working People don't dump this place. But people don't care about that thing.
(g) Are there safety provision for the people?		✓	There's no safety around the community.
(h) Can you smell rotting?	✓		Because people throw the dead things, old things and Pamper of they babys.

Grap Members.

1) Nandipha Mangati.
2) Nolwazi Mbangalasare.
3) Sicelo Ncanywa.
4) Siyabulela Ndabe.
5) Nduthando Mbebetho.
6) Nkululeko Mbaka.
7) Vuyokazi Nzameka
8) Xolela Dyalogi.

Appendix 19b

Works heet 2.

Name..... Grade:..... Date:.....

Name and colour in the following vegetables:

1. Pumpkins



Name ..... Name ..... Name.....

2. Beans



Name ..... Name butter beans Name Sugar beans

Very Good aphwe

Appendix 19c

Please tick √	 **Yes**	 **No**
Did we help each other		
Did we all calculated the seeds		
Did we solve the problem		
What we plant the seeds		
Did we measure the garden		
What we did not do well		

Group Members: 1_____

2_____

3_____

4_____

5_____

6_____

Appendix 20

Works heet 2.

Name..... Grade:..... Date:.....

Name and colour in the following vegetables:

1. Pumpkins



Name ..... Name ..... Name.....

2. Beans



Name ..... Name butter beans Name Sugar beans

Very Good apture

Appendix 21

COMMUNITY MEETING WITH GRADE 8 LEARNERS HELD @ Makana Public Primary School Hall on the 22 September 2005

Time : 17h30

AGENDA

1. Welcome & opening by Exec Mayor.
2. Credentials and apologies
3. Business of the day – Nandipa Manyathi
4. Way forward.
5. Closure.

1. Meeting opened and welcomed all present by Cllr Kate. He mentioned of the importance and encourage working together of the school and the community. He aplaughed learners and teacher for the initiatives towards a healthy environment.

2. Present : Cllr Kate, Cllr N Gaga (ward councillor), Ms. L G Mula-Jameka, Ms Lubelwana, Mrs Lindi, Nandipa Manyathi, Vuyokazi Mzaneeka, Unathi Sonanze, Siphelele Nobebe, Lynette Nontobeko, Lizo Zakene, Vuyani Dacle, Pumla.

Apologies, Ms Gwa & Ms Zono & Mrs Lwana.

3. Nondipha Manyathi (Grade 8 learner and also a Head Girl of the school) Explain the purpose of the meeting also explain the situation of the dumpsite and how it is detrimental to everyone's health. She further explained ~~to~~ the process she undertook to improve the area.

She asked the assistance of the community to sustain the dumpsite when it is clean and stop dumping in the area because it is dangerous to the commuters, animals and learners too.

Way foward.

The Mayor and the ward councillor vowed to take this to the Municipality in order to assist in the process further promised of early black bags to help with cleaning.

Closure

Ms Mula-Jameka thanked everybody present and explained the importance of the working together. Meeting closed @ 19h30.

Appendix 22