

**FOOD GARDENS, ENVIRONMENTAL LESSON PLANNING AND
ACTIVE LEARNING IN THE LIFE ORIENTATION LEARNING
AREA – FOUNDATION PHASE: A CASE STUDY AT
LUNGELLOLETHU LOWER AND HIGHER PRIMARY SCHOOL**



NTOMBIZANDILE SHIRLEY NCULA

JANUARY 2007

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ABSTRACT

This study was conducted at Lungelolethu Lower/Higher Primary School in Keiskammahoek at a time when I was struggling to understand and implement the new South African curriculum policy, particularly in the Foundation Phase Life Skills Learning Programme. The research focused on my developing an understanding of key Learning Outcomes and linking them with the National Curriculum Statement principle of social justice, human rights, a healthy environment and inclusivity.

During this time I was the key 4-H Programme educator in my school, responsible for school food garden activities. I used the school food garden for this study to explore the opportunities the garden might provide to develop the new curriculum using active learning approaches to teaching and learning; as well as to respond to environmental issues such as poverty.

This research was an interpretive case study which supported my reflections within a practical action research framework. This framework suited my intention to change my classroom practice. I undertook three action research cycles with the first cycle aimed at gaining insights from the 4-H Programme teachers which informed 2 lesson plans for cycles 2 and 3 respectively. I generated data through focus group interviews, observations, document analysis, video and tape recording, and my research journal entries.

The data indicated the value of school food gardens in meeting curriculum requirements, particularly in relation to learner centred ideologies and the first principle of the national curriculum. As both researcher and mediator of learning, I developed skills and knowledge that helped me to understand working in the Foundation Phase. The study also revealed a need for meaningful integration within and across Learning Areas when planning lessons in the Life Skills Learning Programme. The study indicated that there is a need to develop assessment practices beyond a technical exercise to a more interpretive approach. Lastly this study offers some recommendations for further research into the use of school food gardens through taking the context of learners into account and by encouraging school community relationships that will also contribute in poverty alleviation.

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CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

This chapter starts by explaining the influences and motivations that led me to want to research my own practice within the Foundation Phase Life Skills curriculum. I also provide a brief introduction to the context of the study by describing the setting, the socio-ecological context and how it has contributed to shaping this research. The objectives and goals that helped to formulate my research question are also described. Finally, a description of each chapter is articulated to give a clear picture of what is to be expected in that particular chapter.

1.2 BACKGROUND TO THE STUDY

In the year 2001, I was in the Bachelor of Education (Honours) course at Rhodes University with Environmental Education as one of my course electives. This course developed my understanding of environmental education as a means to address issues that affect our communities and wider society. During this period the institution where I work – Lungelolethu Lower and Higher Primary School – was participating in the 4-H Programme established earlier by the agricultural extension section of the Department of Agriculture (Keiskammahoek). The 4-H Programme (which refers to Head, Health, Hands and Heart) is based on the principles of ‘learning by doing’. The aim of establishing 4-H as it was introduced was to address and improve communities’ underdevelopment, for example through introducing new skills within the practices of agriculture, education, culture, home management, health and hygiene. This was done through sharing of good things experienced by parents, teachers, Agricultural Extension Officers and the youth (Ncula, 2004b) in the programme.

I was the educator responsible for the 4-H Programme in my school and became enthusiastic about the programme. During that time I found myself privileged to be in the BEd (Honours) course because I started to understand environmental issues and risks

such as poverty levels in the context of my work. Because of the knowledge I acquired from the BEd course, I gained a deeper understanding of how the 4-H programme, with food gardens in particular, seeks to address poverty in our communities. Through knowledge and skills that the course enabled me to acquire, I sought to find ways of changing practices in curriculum development in my context. This led me to develop a passion for understanding how the school food garden could contribute to sustainable development as this was the issue being discussed in educational circles at the time. This concept is of significance at a global level too, as evidenced by the fact that the conference of Ministers for Environment in May 2003 “stressed the necessity to improve the education systems and the design of learning programmes for sustainable development to increase general understanding of how to promote and implement sustainable development” (UNESCO, 2004:7). In section 2.3.2 I discuss the concept of sustainable development further in relation to my study.

In 2004, I started a Masters in Education (Environmental Education) at Rhodes University. The course enabled me to review the 4-H Programme. When I reviewed the 4-H Programme as a course assignment, I came to understand that the programme intended to address curriculum concerns as well as to respond to the issue of poverty (Ncula, 2004b). The review process introduced me to information about the historicity and goals of the programme and this is when I realised that my school, and probably other schools, were not achieving the curriculum goals of the programme. In addition, my experience of working within the 4-H Programme in my school highlighted the omission of Foundation Phase learners from programme activities. Thus, as a Grade 1 and 2 teacher, I sought to infuse the 4-H school food garden project into my teaching practice through this study.

I wanted to investigate the possibility of integrating food gardens within the Foundation Phase curriculum through the 4-H sub-programme for young learners called “See them growing”. The historical review referred to above also revealed that a major objective of the programme (where it started in Nebraska, America) was to simplify writing and arithmetic teaching methods (ibid.). I found this to be relevant to the Foundation Phase teaching and learning and I decided to carry out this research in the context of my job as an educator and co-ordinator of the 4-H Programme in my school. I did this through exploring ways of planning lessons within the present curriculum policy known as the revised National Curriculum Statement (NCS R-9). The NCS (R-9) Principle 1, Learning

Outcome 1 (LO1) and Assessment Standard 2 (AS2) of the Life Orientation Learning Area were analysed to plan and implement lessons focused on the school food garden.

1.3 BRIEF INTRODUCTION TO THE CONTEXT OF STUDY

The study was conducted as an action research case study within the Life Skills Learning Programme in Grades 1 and 2, as I am a multi-grade teacher at Lungelolethu Lower and Higher Primary School in Keiskammahoek.

Keiskammahoek is a village located within the Amahlathi Municipality which is part of the Amatola District Municipality along the N6 Highway between Queenstown and East London. Its population is estimated at 153 496 with 20 wards according to the new demarcation. The history of the area reveals that the original inhabitants of the area were groups of San (Bushmen) and Koi (Hottentots). Collectively known as the Khoisan, they were responsible for many of the place names or features. The name Keiskammahoek separated is derived from *Keis* or *Kheis* which is believed to be a Khoisan word meaning 'shining' or 'glittering'; *kamma* (*kama*) is the Xhosa word for water, giving the interpretation of Keiskamma as 'shining water'; and *hoek* is a Dutch word and refers to the blind upper end of the valley where a river flows. Keiskammahoek is also known as Qobo-Qobo which is a Xhosa name, and the meaning is unclear but has something to do with the breaking of a stick (South Africa, Department of Water Affairs and Forestry, 1998).

The Amatola district municipality is rich in biodiversity and so is Keiskammahoek. The area is mountainous and forested with big dams, namely Cata, Sandile and Mnyameni. The river Keiskamma which is named after this place is the only large river basin located almost entirely within former Ciskeian territory. The river and its tributaries may be described as the most important river system of the former Ciskei (Scott & Hunting, 1977).

People in this area depend largely on agriculture for their living. The Amahlathi municipality, which comprises Keiskammahoek, Stutterheim and Cathcart, has 426 625 square kilometres of land under agriculture (South Africa, Department of Agriculture, 2004-2005). Livestock, horticulture and field crops are key enterprises in the area.

Interviews I conducted with some of the area's residents established that maize, potatoes, wheat, and pumpkin are produced in the area. An interviewee at Ngxalawe said:

We used to get most of our food from the fields, but now we are lazy, we cultivate just a small piece of land and buy from the shops. Many crops like beans, maize, potatoes, pumpkin and wheat were produced from the fields. We had cattle and goats and now there are few people who have those things.

(Ncula, 2004a:4)

The 4-H Programme is trying to develop young farmers by transferring the necessary skills of agriculture so as to re-establish this area's style of living.

1.4 THE OBJECTIVES OF THE STUDY

This study was aimed at gaining more insight into what opportunities the school food gardens could provide for curriculum development. I wanted to understand how the school food gardens could be integrated with the curriculum so that I could improve my own practice and share my understanding of gardening and the curriculum with my 4-H colleagues. The goals of the study therefore were as follows:

1. To review practices on how food gardens are used in teaching and learning processes.
2. To develop two environmental lesson plans with an active learning focus.
3. To trial and review lesson plans.

Through this research I wanted to make recommendations to the 4-H Programme for improving links between food gardens and the curriculum.

I formulated the following research question to support these goals: How can food gardens be used for environmental lesson planning and active learning in the Life Skills Learning Programme in the Foundation Phase?

1.5 AN OVERVIEW OF THE STUDY

1.5.1. Chapter 1 – Introduction to the study

In this chapter I focused mainly on the context in which the research was conducted. I explained the geographical structure of the study area to provide insights into how socio-cultural and environmental relationships helped shape my study. I discussed my experience of working within the 4-H Programme, in particular the school food garden, to illuminate how I developed an interest in conducting this research into curriculum possibilities for food gardens. I briefly explained how the NCS (R-9) curriculum policy contributed to my study focus which is situated in the Foundation Phase Life Skills Learning Programme.

1.5.2. Chapter 2 – Literature review

To give a better understanding of why I decided to investigate the potential of school food gardens in contributing to curriculum development in this study, I start by exploring levels of poverty in the South African context. I did this to get a better understanding of how learning in the garden could help develop a sense of relevance to the world in which the learners find themselves. I also discuss theories of learning that recognise learning as meaningful when it is socially constructed in a situated setting. I review literature in this chapter to provide a historical background to the use of school food gardens in the curriculum with reference to three countries, namely the Republic of South Africa (RSA), United Kingdom (UK) and the United States of America (USA). The histories provided insight into the curriculum transformation processes in these countries and how lesson plans may be designed to support educational values underpinning the South African Constitution (see sections 2.3.2 and 2.5.4).

1.5.3. Chapter 3– Research methodology

This chapter describes the research methodology and orientation which guided the study. It explains the research design decisions through reviewing interpretive case study methodologies and their relevance to the research question and goals. I report on the

research tools used to generate data and how the data was analysed with reference to three action research cycles (see section 3.3). I further discuss aspects of ethics and trustworthiness important to the study.

1.5.4. Chapter 4 – reporting and analysing the action research cycles

This chapter provides a critical analysis of what actually took place in the study. I report on data generated in three action research cycles. The description of the first cycle of the action research process provides insights into data generated during focus group interviews. The description of cycles 2 and 3 of the action research process describes data generated in the planning and implementation of lesson activities for Grades 1 and 2. The reflections on Cycles 2 and 3 are presented in the form of preliminary analyses for each lesson activity. In conclusion, I synthesise the issues that emerged from all three cycles. This forms the basis of a set of analytical statements which I discuss in the next chapter. The analysis of Cycles 2 and 3 of the action research process concentrates on Learning Area Statements which I present here for purposes of cross–referencing.

Table 1.1 Learning Outcomes and Assessment Standards used in the study

Grade	Learning Area	Learning Outcomes	Assessment Standards
Grade 1	Life Orientation	LO1: Health Promotion- The learner will be able to make informed decisions regarding personal, community and environmental health.	AS2: Explains steps to ensure personal hygiene and links these steps to environmental health.
Grade 2	Life Orientation	LO1: Health Promotion- The learner will be able to make informed decisions regarding personal, community and environmental health.	AS2: Suggests and investigates actions to make the home and the school environment healthier.
Grade 1	Geography	LO3: Exploring Issues - The learner is able to make informed decisions about social and environmental issues and problems.	AS1: Identifies and describes issues affecting personal health or safety in the school and/or home environment [the issue].

Grade 1	Geography	LO3: Exploring Issues- The learner is able to make informed decisions about social and environmental issues and problems	AS3: Suggests ways to improve personal health or safety by proposing solutions or alternatives that will reduce the risk to personal health or safety [making choices].
Grade 2	Geography	LO1:Geographical enquiry - The learner is able to use enquiry skills to investigate geographical and environmental concepts and processes.	AS 2: Identifies and describes significant features of places in the local context [answers the question].
Grade 2	Geography	LO2: Geographical Knowledge and Understanding - The learner is able to demonstrate geographical and environmental knowledge and understanding.	AS1: Describes key features of different places, including people's interactions with places [people and places].
Grade 1	Languages, English – Home Language	LO2: Speaking- The learner will be able to communicate confidently and effectively in a spoken language in a wide range of situations.	AS8.2: Reports back on behalf of a group following group work.
Grade 1	Languages, English – Home Language	LO4: Writing-	AS2.2: responds to a picture by writing simple sentences
Grade 1	Arts and Culture	LO1: Creating, Interpreting and Presenting - the learner is able to create, interpret and present work in each of the art forms.	AS 10.1: Presents images of own world in various media AS 10.2: Uses the senses and emotions to explore design elements, with emphasis mainly on primary colours and line.
Grade 2	Natural Sciences	LO1: Scientific Investigation - learners confidently on their	AS 2: Participates in planned activity independently or as

		curiosity about natural phenomena; they investigate relationships and solve problems in Science, Technology and environmental contexts.	part of a group.
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1.5.5. Chapter 5 – school food gardens, environmental active learning and lesson planning in the foundation phase life skills learning programme

In Chapter 5, I discuss the main findings as reported in Chapter 4. The insights gained from the findings are articulated in the form of analytical statements taking cognisance of the research question which seeks a deeper understanding of how the school food gardens may be used for curriculum opportunities in the Foundation Phase Life Skills Learning Programme. Furthermore, the findings are put together and discussed in relation to the context of the NCS (R-9), its requirements and the theoretical framework influencing this research.

1.5.6. Chapter 6 – Conclusion and recommendations

This chapter is a summary of the study and reflections on the processes involved in making this study meaningful and relevant to the context for which it was designed. My reflections also reveal the strengths and weaknesses in the processes of conducting research based on investigating your own practice within a limited time frame. It also discusses what I have learnt from the study and how it has opened up some practical possibilities and insights for conducting school garden activities for improved teaching and learning processes. It culminates in a set of educational recommendations that I believe are challenging and motivational to researchers who are interested in following the study of integrating school food gardens in developing the curriculum.

1.6 CONCLUSION

This chapter started by providing a detailed description of the context of study, which included the demographics and history of the research site and the underlying factors that informed this research (*the research interest*). I indicated that this research stems from my desire to explore school food garden opportunities for learning within the NCS (R-9) Foundation Phase Life Skills curriculum. I also explained the role of the 4-H Programme and its association to this study. Finally I provided a brief overview of the study as a whole, outlining the different chapters of this research report. In the next chapter I provide further insight into the context of the study and its theoretical underpinnings.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter outlines some of the literature that is relevant to this study which focuses on school food gardens in the curriculum. It starts by introducing the state of poverty in South Africa and continues by exploring how apartheid in South Africa affected the education system and social values of the disadvantaged Black Africans and Coloureds. To provide a broader context for the research it begins with a brief look at the history of food gardens in the curriculum in three countries: South Africa, the United States of America and the United Kingdom. This is followed by a more detailed exploration of school food gardens in the South African revised National Curriculum Statement (NCS R-9) for General Education and Training. The discussion also covers theories of learning relevant to the study.

2.2 POVERTY IN SOUTH AFRICA

Poverty is a social ill afflicting the majority of South Africans. It rears its ugly head in almost every community and its surrounding schools. As mentioned in section 1.2 this study was informed by the 4-H Programme which has the aim of responding to the issue of poverty in schools and communities. When I observed poverty in my school, and the contribution of the 4-H Programme, I decided to make an educational contribution by researching food gardens and how they can help to alleviate poverty. For this reason, I provide a more detailed discussion on the state of poverty in South Africa.

According to May (2000 cited in Terreblanche, 2002:30) “over the past eight years the distortions and dynamics of apartheid continue to reproduce poverty and perpetuate inequality”. He identified four poverty traps set by apartheid that are worsening poverty in society (ibid.).

1. High and rising levels of unemployment in a sluggish economy.
2. Deeply institutionalised inequalities in the distribution of power, property and opportunities between the white and black elite and the poorest half of the population.
3. Disrupted and fragmented social structures and the syndrome of chronic community poverty in the poorest 50 per cent of the population.

4. The mutually reinforcing dynamics of violence, criminality, and ill-health on the one hand and the process of pauperisation on the other.

According to Wilson and Ramphela (1991:101) “homeland areas appear to be the worst environments in which to raise children”. This is evident in Esikhwini and Mpukunyoni in KwaZulu – Natal and in the former Ciskei where more than 15 per cent of children are at risk of malnutrition (ibid.). The HSRC reported in a national survey that “14% of children had tea or nothing, while 75% had tea and or bread and or porridge for breakfast” (HSRC, 2005:53). It was also reported by the Theron Commission in 1976 that the syndrome of chronic community poverty had an adverse effect among 40 per cent of the Coloured population group and existed for generations among poorer Africans (Terreblanche, 2002). Adding to this is the research reported by Weaver, Le Roux and Pretorius (1999: 23) that “poverty rates are high, with 20% of households having monthly incomes of less than R500”.

The third poverty trap identified by May (cited above) was the one that most affected and disrupted social life of African families especially in rural communities. The effects were evident in the Eastern Cape and the Vaal Triangle since the period of economic decline of major industries. Unskilled workers were either laid off or retrenched (Terreblanche, 2002), which meant that labourers had to return to their localities. The added burden of unemployed breadwinners had a downward spiral effect on familial relationships resulting from the “demands of capitalist entrepreneurs looking for cheap and docile labour” (May, 2000 in Terreblanche, 2002:40). Terreblanche further argued that “the elaborate mechanisms of proletarianisation, repression, and discrimination not only impoverished indigenous people physically, but probably did even more psychological damage” (ibid.). They also argued that the effects of chronic community poverty in young learners, such as spiritual, psychological and moral neglect, are difficult to overcome even when conditions improve at a later stage (Terreblanche, 2002).

The NCS (R-9) is designed in such a way that educators can design lessons that respond to these poverty traps through developing learners’ knowledge, values, attitudes and skills that can contribute to social transformation. This can be done through engaging learners in activities where they question their lifestyles. If the learners can relate their education to how and why they do things, this critical thinking can help them realise the need to be

engaged in decision making to make changes in society. For example, gardening activities would teach them not only agricultural skills, but can help them to be aware and question things affecting their context. In this way the learners can link what they learn in school to other aspects of life and understand how they can respond to their local problems.

2.3 HISTORY OF THE USE OF SCHOOL FOOD GARDENS IN THE CURRICULUM IN SOUTH AFRICA

In this section I discuss the history of school food gardens in South Africa and their role in gender stereotyping and racial subjugation. This history helped to sensitise me when developing activities in the school garden to avoid problems experienced in the past. The section also covers the curriculum, its role in social change, and possibilities for using the garden for this particular role.

2.3.1. Pre – 1994 – Gardens, gender stereotyping and racial subjugation

Before the advent of schooling for South Africans, males dominated the agrarian era in South Africa and males, in that period, were seen as being the predominant thinkers and planners not only in animal husbandry, but also in crop production. The role of women was reduced to that of being mere assistants in crop production, in that they were only required to hoe the plantation fields. This led to them being subservient to males in terms of agricultural production issues (M.A. Ncula, personal communication, November 15, 2005).

The work of Visvanathan, Duggan, Nisonoff and Wieggersma (1997) provides evidence of women's seclusion in African agricultural households. In their work they provide insight into three basic variants of household food production systems. In all three, there are clear distinctions of gender roles, even where men and women worked together in food production. For example, in the third variant men were responsible for most of the food production and women specialised in food processing and trade (Visvanathan et al., 1997). Whilst most women were prevented from engaging in field work, young girls and older women were allowed to help on male fields, and married women were allowed to cultivate small gardens within the compounds (ibid.). The third variant represents my own experience of food production where I grew up in a context where men were considered

to be stronger than women and were expected to perform heavy duties in food production systems.

The South African schooling system in the 1930s and the 1940s attempted to impose and control “divisions between colour-castes, with different systems preparing blacks and whites for their respective sub-ordinate and super-ordinate positions” (Gulting, Hoadley & Jansen, 2002:133). Baxen and Soudien (in Jansen & Christie, 1999:131) argue that central to apartheid education were “the presumptions of European superiority and African inferiority which were invoked as modern truths about human potential, progress and development”.

With the advent of formal schooling gender stereotypes were also prevalent in the Bantu Education policy and practices of the Apartheid era which was launched in 1948. Gulting, Hoadley and Jansen (2002:128) reporting on the Eiselen Commission in 1951, stated that “Bantu Education was designed to emphasise the functional value of the school as an institution for the transmission and development of black cultural heritage”. The HSRC reported that the apartheid system misused and manipulated the use of local culture and notions of rural South Africa to introduce a narrow and limited curriculum (HSRC, 2005). Men, for example, were regarded as the heads of the house and as being stronger than women, hence boys were assigned to do agriculture.

In the 1950s and 1960s the school curriculum for African primary schools was based on minimum literacy skills, sewing and housecraft for girls and woodwork and gardening for boys (Gaitskell, 2002 in HSRC, 2005:97). During that era of Bantu Education there was a subject called Gardening in primary schools and Agricultural Education in high schools, particularly in the homelands. The subjects explicitly portrayed a worldview that saw Blacks as subordinate to the ruling White race, and also perpetuated gender stereotypes through portraying girls as subordinate to males (ibid.). Christie (1985:143) argued that “the studies of work, for example, show that women are less likely than men to rise to higher positions. And they usually get lower pay than men do”.

The struggle to fight apartheid education was manifested in many ways and on many fronts. One of the fronts entailed some teachers resisting the teaching of gardening. Some resisted because of a basic objection to the ideology that underpinned Bantu Education

and the role it defined for Blacks in society (Paterson, 2004:88 in HSRC, 2005). Others explained their resistance on the grounds that there were no facilities provided for the practical side of the subject (ibid.).

During the pre-1994 era, the primary school phase was used to enforce the gender stereotypes described above. From Standard 3 to Standard 5, certain periods were allocated for gardening, which was specifically designated for boys and certain periods were allocated for needlework and clothing, specifically designated for girls (Christie, 1985). This was in line with the adage that the women's work is the kitchen and not on the ploughing fields. According to Truscott (1994:42 in HSRC, 2005:97) "Bantu Education was to turn African men in rural areas into hewers of wood or drawers of water and African women into scrubbers of floors, child minders and weeders of fields".

Despite the formal division of gender roles in subjects taught, some school authorities would send girls (and boys) to do gardening as punishment for misbehaviours (M.A. Ncula, personal communication, November 12, 2005). This use of the 'garden' as a place of punishment may well have aggravated the perception that there was in fact little or no learning in gardening and added to the list of negative associations with it.

In the light of the problems of gender and racial stereotyping and subjugation described above, the post-apartheid era has opened opportunities for revisiting the role of the school garden in curriculum and socio-economic transformation. Therefore lessons planned for this research include both girls and boys in issues related to food production through inclusive education in accordance with the NCS (R-9) principle of inclusivity.

2.3.2 Democracy period (post – 1994)

With the arrival of democracy/majority rule, the inherent problems of the apartheid era became even more glaringly evident. Poverty, an ugly scourge in our society, continued to manifest itself everywhere. Among the mechanisms put in place to alleviate the social ills of poverty were school food gardens. School food gardens were also established in

some South African schools under the 4-H Programme (see section 1.1). The 4-H Programme was introduced into these schools not only to alleviate poverty but also to develop and transform the curriculum.

The Department of Education, as one of the most effective driving forces for social imposition in the apartheid era and now for social change in the era of democracy, put in place a curriculum that was aimed at removing and reversing the legacy of apartheid, namely, “to remove bias, discrimination, social injustice” (HSRC, 2005: 81).

Certain principles now guiding the new education curriculum are embedded in and stem from the nation’s new constitution. The constitution intended to sweep away the legacy of mental underdevelopment, authoritarianism and rote learning, characteristics of Christian National Education and Bantu Education. Attesting to this it is stated in the overview document that:

The curriculum aims to develop the full potential of each learner as a citizen of a democratic South Africa. It seeks to create a life long 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.

(South Africa, DoE, 2002e: 8)

South Africa’s new constitution enshrined the right to a healthy environment as part of the Bill of Rights (South Africa, 1996) and brought the concept of sustainable development to national policy discourse (Lotz-Sisitka, 2002). Sustainable development was defined through the United Nations Decade of Education for Sustainable Development Programme as:

a dynamic and evolving concept with many dimensions and interpretations which reflects locally relevant and culturally appropriate visions for a world in which development meets the needs of the present without compromising the ability of future generations to meet their own needs.

(UNESCO, 2004:7)

Thus, the concept of sustainable development emerged in the 1980’s in response to the realization that there is a need to consider both economic development and

environmental stewardship and care for the environment. In 1992 it was adopted as a global agenda for change and countries around the world committed themselves to implementing Agenda 21 which meets human needs in a manner that respects intergenerational responsibility, and the need to improve quality of life while protecting the Earth's capacity for regeneration.

(NEEP-GET, 2005:62)

In 1997 Curriculum 2005 (C2005), later revised and known as the National Curriculum Statement (NCS), was introduced to provide a common curriculum that is central to building a new sense of citizenship and responsibility (HSRC, 2005). At the centre of C2005 is the goal of promoting these values and social goals. The intent was that this would be achieved through “learner-centredness, active learning, problem solving, critical and creative thinking, an understanding of the world, and the skills of evaluation and analysis” (HSRC, 2005:81). Principle 1 of the NCS (R-9) requires its citizens to develop an “awareness of the relationship between social justice, human rights, a healthy environment and inclusivity” (South Africa, DoE, 2002e). It is clearly stated in the curriculum documents that these goals would be achieved through becoming sensitive to the issues of poverty, inequality, race, gender, age, disability, and such challenges as HIV/AIDS.

It is with the above global understanding of sustainable development that the existing NCS (R-9) curriculum encapsulates a:

vision of teachers and learners who are knowledgeable and multi-faceted, sensitive to the environmental issues and able to respond to and act upon the many challenges that will still confront South Africa in this twenty-first century.

(South Africa, DoE, 2002e:1)

Significantly, not all that was envisaged in or for the new curriculum (C2005) made sense to, or was workable in, some rural settings. Amongst the reasons given by teachers in rural communities was that C2005 may fit well in schools that have small classes and qualified teachers but is not appropriate for rural schools with large numbers in class, limited resources and teachers mostly inadequately qualified (HSRC, 2005).

Moreover, such a negative feeling about the new curriculum extended to parents and learners in rural communities. The HSRC research has shown that some parents felt that the new curriculum lost its effectiveness when schools abolished a curriculum that was rooted in promoting their own historical and cultural values. For example, parents expected “children of school going age [to] come back from school to assist in the fields” (HSRC, 2005:33). Parents in this case were found by the HSRC to be unconscious of the hidden agendas contained in the past apartheid curriculum and at the same time wished to perpetuate historical and cultural values built on a gendered division of labour. For example the boys were expected to do agriculture or gardening and girls were expected to do sewing in school. Apparently those parents did not see any legacy such as gender inequality and the related gendered curriculum as an imposed product of the past apartheid curriculum, but rather as a curriculum that matched and reflected their existing cultural beliefs (ibid.).

The South African experience with agriculture and food gardens in black schools has thus been shaped by traditional gender roles, the circumstances of rural and subsistence agriculture, widespread poverty of the rural people in often marginal lands, the education ideologies of the dominant white rulers aimed at subordinating black peoples, and more recently by the goals of a liberated South Africa.

The information above raises questions as to what has been the experience with food gardens in the curricula of other countries, and how those experiences relate to the South African scene. Below I outline some additional lessons to be learnt from these countries that help point to the potential of school food gardens to enhance the school curriculum and to contribute to our social and economic goals, including gender equity, poverty alleviation and environmental sustainability.

2.4 BRIEF HISTORY OF SCHOOL GARDENS IN THE UNITED KINGDOM AND THE UNITED STATES OF AMERICA

In this section I present a broader perspective on some of the issues around school gardens through reference to the United Kingdom (UK) and the United States of America (USA). I also present perspectives on possible learning strategies and opportunities that might be portrayed in school gardens. As in the previous section, school and community

relationships and gender roles in curriculum development are explored. Furthermore, the USA curriculum is explored with the intentions of understanding the 4-H Programme better.

2.4.1 School gardens in the UK

Historically in Britain the school food garden was associated with the teaching of rural issues. The use of school food gardens and the teaching of rural issues became part of the continuing education discussions (Dillon, Rickinson, Sanders, Teamy & Benefield, 2003). British school gardens were first eligible for government grants as long ago as 1895. The association of school food gardens with teaching in rural areas led to pedagogical discussions in the UK as to what and where to teach (Jevremovic, 1964 as cited in Dillon et al., 2003). Urban and rural schools required object lessons and nature study to be taught with particular reference to the schools' surroundings. Educationalists such as Frebal, Pestalozzi and Montessori (in Dillon et al., 2003) emphasised the use of gardens and outdoor settings for child-centred education.

Discussions continued between 1905 and 1940 regarding the appropriateness of a nature study focused curriculum for both urban and rural schools. Much of the lobbying for differentiation of the schemes of work in nature study and rural craft skills for children in rural and urban schools came from the Hadow report in 1931 (ibid.). The use of the school gardens for growing vegetables during the Second World War led to an increase in the number of schools including gardens in their subjects (Bramwell, 1961 in Dillon et al., 2003). According to Branson:

In practice the nature study associated with school gardening varied greatly in quality. At its best the opportunities provided by a school garden for the systematic and long term study of part of the natural world were exploited to the full.

(Branson, 1950: 2 in Dillon et al., 2003)

The studies by Bilton (1993 in Dillon et al., 2003) to examine three nursery classes in Berkshire for the inclusion of school gardens throughout the teaching sessions were found

to have alleviated many of the problems that teachers reported. Bilton further reported that teacher attitudes to and appreciation of the garden was crucial to its success.

Studies to explore school gardens in the curriculum in the UK reported a positive impact on the development of the curriculum and social relationships. For example, it was mentioned that some school programmes demonstrated a substantial increase in community and parental involvement (Elliot, 1993; Alexander et al., 1995; Canaris, 1995; Halvorsen, 1995; Morris et al., 2000 and Brynjugard, 2001 all in Dillon et al. 2003). These developments were linked to improved motivation, pride in the school and its locality, as well as increased leadership skills, a sense of responsibility and respect for others. From the participatory action research study of learning opportunities for inner-city youth conducted by Rahn (2002) in a summer gardening programme called City Farmers, it was stated that:

The programme relied on shared knowledge and distributed expertise and encouraged sense-making through shared discourse; learning emerged not solely in the garden work but from the participants' active sense making.

(Rahn, 2002 cited in Dillon et al., 2003)

The report further noted that the guidance young people got from adults within the programme helped them to learn first hand what gardeners and marketers do on a daily basis. This means that active involvement of young learners in the programme allowed them to be part of decision-making and they themselves recognised its educational value without it being imposed on them. The food gardens were found to be of educational value to the curriculum rather than regarded as a 'patriotic duty' as was the case in the early 1900s where gardens were utilised for obtaining government grants as stated above (Carson & Colton, 1962 cited in Rickinson et al., 2004). Another reported value of the school gardens is that they provided a greater nutritional awareness and consequential positive changes in eating habits for students, their families, teachers and communities at large (Rahn, 2002 cited in Dillon, 2003).

Carson and Colton (1962, cited in Rickinson et al., 2004) discussed the place of school gardens in the subject Rural Studies in the curriculum. Historically in the United Kingdom, only boys were allowed to do subjects in Rural Studies (such as rural science

and school gardening) based on the view at the time that boys were physically stronger than girls; but that is different today, such as in the case of food gardens, where girls are allowed to participate. However, later in the twentieth century it was recognised that girls should also be included in gardening subjects. For example Hilton (1959 in Rickinson et al., 2004) noted that girls should share experiences in rural science and gardening equally with boys. He further noted that gardening is Britain's greatest national hobby and it is enjoyed by both men and women on the allotment or around the house (ibid.).

Despite this, the decreasing value of school food gardens in the curriculum resulted in the subject disappearing. One reason for the subject vanishing was that Rural Studies was found to be a practical subject suitable only for students attending secondary modern schools with an emphasis on vocational skills. Other schools used the subject to cater for those children who encountered problems in their learning, and as a result did not shine in other classroom subjects (Carson & Colton, 1962 in Rickinson et al., 2004).

Schools in the UK later reintroduced school gardens into the curriculum by integrating them into other subjects such as Science or as an extra-curricular activity such as a gardening club. This was because it was noted that school grounds or community projects cover a wide range of activities associated with school grounds improvement and greening initiatives, horticultural growing projects in and around the school, outdoor play development and community based environmental work (Rickinson et al., 2004).

2.4.2 School gardens in the U SA

In the USA school food gardens became affiliated to the curriculum as early as the first decade of the twentieth century when educational reformers and philosophers stressed the correlation between learning and personal active experience. Another intention of school gardens in the curriculum was to provide an inclusive education for boys and girls to develop a closer relationship with their environment. Also “educators recognised that the development of strong-embodied, efficient, and contented citizens is the real purpose and the main result of this work” (Jarvis cited in Fang, 1995). This kind of experiential learning developed and approximately 80 000 schools in 1910 implemented it. According to Fang (1995:2) “Gardens, and in the larger context, nature, have long been a component of what educational progressives have associated with real life or hands-on learning”.

Teaching in the garden was found to be useful to take the subject matter closer to the students as they keep working with and learning from it (ibid.). Adding to this ideology is Howard Gardener's theory of "Multiple Intelligences" that proposes the gardens to be an opportunity for high school students to solve problems and create products in "context-rich and naturalistic settings", while using their linguistic, logical-mathematical, spatial, bodily-kinesthetic, and interpersonal intelligences (ibid.).

School gardens were found by Dewey (cited in Fang, 1995) in the early 1900s to create a space for community-school relationships whereby the child's individuality is repeatedly cultured in the social context. He found it crucial to connect academic subjects with students' own experiences. Such experiences would allow opportunities for teachers and students to get out into nature, to touch it and to feel it (ibid.).

Further evidence of the value of school food gardens was evident from the investigation by Mabie and Backer 1996a & b (cited in Dillon et al., 2003) on the impacts of the value of school food gardens on US students' science skills. They identified three approaches to the teaching of agriculture that contributed most to students' learning in the school garden approach. These are: experiential learning through class project work, experiential work in the school garden, and traditional classroom instruction to develop student's science skills.

In the USA, gardens were in some instances also designed as a for-profit business venture for the schools as they produce a material commodity (Fang, 1995). It was in the USA where the 4-H Programme was first created in schools as a resource for learning. The 4-H Programme developers anticipated that 4-H activities, based on learning by doing and earning money through enterprise development, would allow members to develop skills that would be useful throughout their lives. The programme spread all over the country and internationally, including South Africa, and each country had to develop its own activities based on learning by doing.

Thus, in all three countries discussed above – the RSA, the UK and the USA – the school garden became part of the curriculum and provided opportunities for learning in the curriculum. In all countries they also came to be regarded as a vehicle to respond to socio-economic realities. Curriculum policies in these countries are all geared to strengthen inclusivity and provide better education for all, with school gardens contributing to this

process. As indicated above, in all three contexts the processes of learning in the context of school gardens has been emphasised. I now discuss this in more depth, through a discussion on learning theory.

2.5 ENVIRONMENTAL LEARNING AND LEARNING THEORIES

This section considers theories of learning and how these theories relate to the NCS (R-9) policy and learning in a garden. The theories of situated learning, curriculum as a contextualised social process, constructivism, active learning and values education are discussed. The ideas in this section were central to helping design lesson plans for this research project (see Chapters 4 and 5).

2.5.1 Theory of situated learning and curriculum as a contextualised social process

Lotz-Sisitka (2002:99) believed that “change is something that is taking place within horizons of possibilities and not shaped by framings of social life”. School food gardens could be used as an opportunity to create change in teaching and learning to support the present curriculum policy NCS (R-9). One such required change is for teachers to consider *content in context* when planning lessons which would go beyond the learning of facts. In the Foundation Phase Life Skills Learning Programme, for example, “the *context* of learning is provided by self, the local environment, the home, the school and the community” (NEEP-GET, 2004a:1). This means that the lessons planned should consider the fact that learners are unique and come from different backgrounds. This would mean engaging learners in a real life situation (the garden at school) and enabling them to explore concepts as they are confronted with them. The teacher would create learning opportunities that would allow learners to ask questions and at the same time construct their own knowledge. The curriculum policy as interpreted by the NEEP-GET stated that we need to ensure that learning is contextually relevant and meaningful and that would be aided by understanding how young children learn (NEEP-GET, 2004a). This requires teachers who are reflective of their own practice and who are creative and critical about how children learn (NEEP-GET, 2005).

The value of contextual relevance and meaning was highlighted by Lave and Wenger’s (1991) concepts of ‘situated learning’ and ‘legitimate peripheral participation’. They argue that situated learning helps learners acquire knowledge through collaborative social

interaction and the social construction of knowledge. They argue that such learning concerns the process by which newcomers become part of a community of practice (Lave & Wenger, 1991). They further argue that for newcomers, the purpose is not to learn from talk as a substitute to legitimate peripheral participation, but rather to learn to talk (ibid.). Situated learning or legitimate peripheral participation “has the definite advantage of drawing attention to the need to understand knowledge and learning in context” (ibid.). They believe that knowledge that is decontextualised, abstract or general does not make sense in situated learning (ibid.).

Legitimate peripheral participation is further viewed by Lave and Wenger (1991) as an analytical process as it also focuses on problem solving which embodies some of the critical elements of situated learning. The use of school food gardens in the curriculum may lead to learners developing analytical and problem-solving skills. With legitimate peripheral participation learning takes place in both formal and informal contexts (ibid.). Learners learn through having fun and enjoyment in the outside environment and at the same time learning from each other and from the planned curriculum activities. Malone and Tranter argue that:

The school ground is the ‘stage’ where children act out, spontaneously and freely, the events that touch their lives. It is the space where they connect with the social, cultural and ecological domains of childhood. School grounds should promote learning and development.

(Malone & Tranter, 2003:289)

Moreover, such learning is perceived as unintentional rather than deliberate, meaning that what the learners learn is constituted through the process of becoming full participants in the socio-cultural world. Put differently, full participation of learners means engagement in a ‘community of practice’ which represents certain beliefs and behaviours to be acquired (ibid.). Through that process of learning there is a shared responsibility among the group members. Thus, group discussion and decision-making about learning and knowledge binds the group members together into a social unity.

This call for situated learning is consistent with Cornbleth’s view of ‘curriculum as a contextualized social process’. She argued that,

if we conceive of curriculum as a contextualized process, curriculum studies are likely to be practice-oriented, and curriculum change efforts are likely to focus on contextual change.

(Cornbleth, 1990:12)

A contextualised view of curriculum “reflects a critical rather than a technical rationality; hence it encompasses both subject matter and social organization and their interrelations” (ibid.25). In other words such an understanding emphasises the continued construction and reconstruction of curriculum in situated practice. To support curriculum construction, the garden can be reviewed with the focus being on potential knowledge resource and learning opportunities for learners to learn. The curriculum can be contextualised in that all garden practices can be linked to curriculum work.

The garden can develop learners’ ability to participate in a community concerned with the practices of garden design and development, feeding schemes, financial management, etc. In this sense the learners and participating community members can influence and interpret the curriculum.

Relevant to my research within the ethos of considering contextualised curriculum and situated learning is a view that the school food garden is a valuable resource and potential place for learning. Malone and Tranter, arguing for the potential of school grounds for learning and development, state that:

School grounds have potential as a rich resource for formal learning ... School grounds provide access to real-life natural experiences (for example conceptual exploration of living and non-living things, interdependence, biodiversity, life-cycling, recycling and food webs). As well as these obvious connections with the ‘natural’ world, a diverse and well designed play environment provides an opportunity to develop important lessons on cooperation, ownership, belonging, respect and responsibility.

(Malone & Tranter, 2003:289)

Akerblom (in Wickenberg, Axelsson, Fritzen, Hellden & Ohman, 2004) discussed how learning in the garden occurs on different levels. They note that the challenge for the teacher is to combine practical garden work with more theoretical reflections together with the pupils.

The garden as a *place*, according to Akerblom (in Wickenberg et al., 2004) is for health and well being. It means fresh air, beauty and a place for both urban and rural children to be connected with nature. Titman (1994:58 cited in Malone & Tranter 2003:291) describe four elements children looked for in school grounds, namely:

- *A place for doing*, which offered opportunities for physical activities, for ‘doing’ all kinds of things, and which recognised their needs to extend themselves, develop new skills, to find challenges and take risks.
- *A place for thinking*, which provided intellectual stimulation, things which they could discover and study and learn about, by themselves and with friends, which allowed them to explore and discover and understand more about the world they live in.
- *A place for feeling*, which presented colour, beauty, and interest, which engendered a sense of ownership and pride and belonging, in which they can be small without feeling vulnerable, where they could care for the place and people in it and feel cared for themselves.
- *A place for being*, which allowed them to ‘be’ themselves, which recognised their individuality, their need to have a private persona in a public place, for privacy, for being alone with friends, for being quiet outside of noisy classroom, for being a child.

The four elements above illustrate that children have the opportunity to develop both social and cognitive skills when they utilize their school grounds and thus, by extension, also the school garden. In this research I will focus on the first two elements. Learners would be supported in lessons planned for this research to perform garden activities to develop new skills such as handling of garden tools and designing of plots. In the process they can develop a sense of ownership, pride and belonging as they are grouped according to their plots in the garden. What really matters and is of concern in this research is to develop learners’ thinking and meaning making with reference to environmental issues and risks, which are contextually relevant using the school food garden.

In the discussion above I have underlined the importance and potential relevance of a number of concepts for my research project. The concept of *situated learning* with its element of learning through collaboration and contextualisation, with the *school grounds/school garden as a place* for social interaction, doing, and thinking provides a major impetus for this research project. This I hope will provide me with one of the central conceptual themes for designing my study and one of the analytic lenses for examining the data.

My understanding of gardens and their potential within the curriculum can also be informed by an understanding of how knowledge is viewed within the ideology of

situated learning and curriculum as a contextualised social process. The discussion on constructivism that follows seeks to address that.

2.5.2 Constructivism in the South African curriculum and this study

The new South African curriculum is guided by a constructivist approach to teaching and learning. Moll (2002:6) says:

Whatever one might think of it as a theory of knowledge, learning and pedagogy, there has undoubtedly, in South African education governance, been a movement towards establishing guidelines that will place *constructivism* at the centre of the development of teaching and learning policy for South African schools.

As reported in the NEEP-GET

Environmental education processes in South Africa have, for a while now, supported social constructivist approaches to learning, in which contextual, cultural and language-based construction of knowledge are emphasised.

(NEEP-GET, 2005:32)

Of relevance to my study is the requirement that any lessons and teaching within the South African classroom should be guided in part by a constructivist approach. This approach emphasises the social aspect of learning, the value placed on learning in context, and active learning (Moll, 2002). Constructivist views of learning as suggested by Klein and Merit (1994) emphasise the posing of a question in real life for students to investigate. The teacher needs to modify questioning based on an understanding of students' prior knowledge and thought processes. Students are engaged in tasks such as experimentation, investigation, observation and discussion so that they are actively involved in the learning process. The role of the teacher should be to create a learning environment that is conducive to the construction of knowledge, providing guidance, assessing appropriate tasks, making resources and materials available to students and supporting them in their interaction with others.

What follows are some key aspects of constructivism highlighted in the literature, namely (1) The social elements of learning (Vygotsky cited in Schunk, 1996; Baumann,

Bloemfield & Roughton, 1997) (2) Guided participation and intersubjectivity (Rogoff, 1990) and (3) Active learning (O'Donoghue, 2001).

With a constructivist approach to teaching, the teacher's role within the learning process becomes an indirect one that provides the optimum experience and environment to foster the child's capacity to develop and learn. This means that teachers are responsible for creating a learning environment where the learners' cognition is challenged according to their level of ability and their context.

Vygotsky (cited in Baumann, Bloomfield & Roughton, 1997) believed that from the onset the child learns because of social interactions between adults and more capable peers. For Vygotsky, development moves from the social level to the individual level (*ibid.*). The socio-cultural world within which the child develops determines not only how the beliefs and knowledge are acquired but what the child learns in the process. Learners would be provided with situations or learning experience where they have to make decisions to solve problems. There could be multiple perspectives in the process of meaning-making that would lead to the development of social and cultural values by learners.

The issue of the language of learning has particular pertinence to my study because of the challenges of teaching in a multi-lingual context and learners often having to learn in a second language. Vygotsky emphasised the importance of language during the developmental stages of thought. Language acquisition is through social engagement with other people. This means that children learn language by imitating their parents and other people around them until they enter school. Therefore the language learnt at school has to consider the learner's prior knowledge before new concepts are introduced. For example the policy for Life Skills in the Foundation Phase (which this research rests on) encourages learners to be assessed in their home language (South Africa, DoE, 2003). The Department of Education further noted that if the language of teaching and learning is not the same as the learner's home language, teachers have to provide language rich experience to support cognitive development (*ibid.*).

Recognizing the prior knowledge of learners is central to constructivism. Recognising prior knowledge enables the teacher to fill the gap between the level of understanding of the child and the level the teacher hopes them to achieve. Understanding learner's prior

knowledge helps teachers to understand the point of departure for activities in their lesson plans.

This gap is viewed by Vygotsky (in Schunk, 1996) as the Zone of Proximal Development (ZPD). In Vygotsky's words the ZPD is defined as:

The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.

(Vygotsky 1978: 86 in Schunk 1996: 215)

Adding to Vygotsky's view about ZPD is recognition that teachers and learners work together and share their cultural beliefs and norms. The learners bring their day to day experiences to social relations and construct meanings by integrating those with new understandings in the *milieu*. Through those culturally mediated interactions, cognitive change is produced when it is internalised by the learner. In other words the everyday engagements of children and adults in sharing activities contribute to the rapid progress of children and they become skilled members in the intellectual and social lives of their society (ibid).

Rogoff (1990) suggested that working in the ZPD requires a good deal of guided participation. According to her, guided participation is identified as building bridges between what children already know and can do, and new information and skills to be learnt (Rogoff, 1990). In other words Rogoff's perception of building bridges is that these bridges scaffold learners through guided participation. Within the scaffolding process, adults have to acknowledge that learners may offer unique possibilities for discussion and collaboration when they consider each other's perspective in a balanced fashion (ibid.). The teachers recognise prior knowledge of learners and find gaps between what learners know and should know. They create suitable learning experiences which are the bridges for learning that will provide the necessary information and skills needed by learners. This means that many factors should be considered by teachers when guiding learners' participation such as creating space for open-ended discussions until they together reach a

consensus. Furthermore, there should be tolerance and respect for each other's views.

According to Rogoff:

the mutual understanding that is achieved between people in communication has been termed *intersubjectivity*, emphasizing that understanding happens *between* people; it cannot be attributed to one person or the other in communication.

(Rogoff, 1990:67)

Intersubjectivity also relates to Lave and Wengers' understanding of the community of practice where group members share their views and experiences for a common goal (Lave & Wenger, 1991).

2.5.3 The theory of active learning

Theories of active learning have been considered a crucial element in transforming the South African curriculum (NEEP-GET, 2004b). Like in situated learning, constructivism and OBE approaches to curriculum, active learning promotes an understanding that knowledge is constructed through social interaction in the environment.

In active learning, learners are holistically developed in the sense that the approach to learning is enquiry-based and focuses on devising means to address the issue in focus. During activities such as enquiry encounter learners' senses are challenged. Enquiry can be promoted in the garden through asking learners to observe, feel and smell and investigate aspects of the garden and nature.

From the active learning framework refined by O'Donoghue (2001), the NEEP-GET piloted and refined questions that helped the teachers to plan lessons. The questions were as follows:

- What do learners already know?
- What information is needed?
- What enquiries can be taken?
- What action can be taken?
- How can investigations and actions be reported?

The NEEP-GET found the above questions to be useful for assessing learning outcomes in ways that support developing competence and environmental learning outcomes in each Learning Area. The assessment can be done by both teachers and learners and that contributes to the steering of active learning and refining of action competence (ibid.). This means that considering these questions in lesson planning would enable teachers to mobilise learners' prior knowledge and scaffold them to a higher level of understanding. In this way teachers' planning of lessons can support learner-centredness and constructivism learning as envisaged in the NCS (R-9). Active learning might provide opportunities for learners to feel self-empowered and much more in control of their learning, since they are no longer subjected to the whims of the teacher only (Kruger, 1998). They become co-directors of their learning experience, and their different learning styles are accommodated in the process.

A learner-centred approach to education in OBE is explained as responding to what learners already know, and challenging them to learn more than they already know, through actively engaging in meaning-making through relevant learning activities and support from the educator (NEEP-GET, 2004a). It was further reported (NEEP-GET, 2005) that when learners are encouraged to interact in social and cultural contexts through the process of dialogue (talking), encounter (doing things) and reflection (thinking about what has been done) such learning is centred on the ideas of active learning. According to O'Donoghue (2001:7)

Environmental learning is often spontaneous but is best when mediated with active learners in a local environment. With a relevant risk, issue or concern as a focus, learners can find out **'about'** the environment, undertake investigation **'in'** their local surroundings and do things **'for'** a healthier and happier world.

Furthermore, young learners need to come to know about *things as they are*, but they also need to develop the ability to critically reflect on issues and risks and conceptualise *how things might be better* (ibid.). Learning about the environment in the process of exploring food garden opportunities for learning would mean learners are encouraged to know and understand the social and historical background based on issues such as poverty and gender inequalities as discussed above in (sections 2.2 and 2.3). For example, learners could find out about what makes soil healthy, find out about the health of the soil in the

environment, and do something for the environment by doing something to improve the soil.

2.5.4 Values education

In section 2.5.1 it is stated that curriculum is not concerned about the content taught in the classroom only, but how it can bring about social change considering socio-cultural practice. This change can be supported through promoting values for the good of the environment such as respect for living and non-living things. The promotion of certain values in the South African learner is explicitly stated in the NCS (R-9) curriculum as not only being important for personal development, but also to ensure that a national South African identity is built on values very different from those that underpinned apartheid education (South Africa, DoE, 2002e). Principle 1 as articulated in section 2.2.2 clarifies and emphasises the importance of foregrounding social goals in the curriculum (NEEP-GET, 2004b). Furthermore issues such as over-exploitation of resources for the benefit of a few, unequal distribution and use of resources, ways in which access to resources (e.g. water, soil, land) contributes to the quality of life of people, how human actions degrade and impact on the environment in ways that threaten life, and our natural and cultural heritage and the future of the planet are emphasised within the framework of a healthy environment, social justice, human rights and inclusivity (ibid.). The values underpinned in Principle 1 are meant to be achieved through LOs such as LO1 of Life Orientation Learning Area which focuses on 'Health Promotion'. This LO states that the learner should be able to make informed decisions about personal health, community health, and environmental health (South Africa, DoE, 2002c:9). As interpreted by the NEEP-GET in the Foundation Phase:

Learners start early by making links between personal hygiene, health and safety and a healthy environment; and identify ways in which their local or school environment can be improved, e.g. cleanliness, fresh air, trees or a garden.

(NEEP-GET, 2004c:11)

According to the Department of Education (2002c:5) Learning Outcome 1 of Life Orientation promotes sound health practices, and an understanding of how the relationship between health and the environment can improve the quality of life and well-being of learners. This means that in lesson planning both the principles and practices of

social justice, respect for the environment, human rights and inclusivity should be considered to show links between Principle 1 and Learning Outcome 1 with its Assessment Standards. Life Orientation was chosen for this study because of its strong contribution to environmental learning in the NCS (R-9) through emphasising:

- *Informed decisions and healthy choices*, particularly regarding health promotion
- knowing and *exercising one's rights and responsibilities*, and
- the *holistic development* of the learner as an individual in society.

(NEEP-GET, 2004c:9)

2.6 LINKS BETWEEN THE NCS (R-9) PRINCIPLES AND LESSON PLANNING

In section 2.3.2, I highlighted that the new NCS (R-9) curriculum policy is aimed at promoting and developing values underpinned by the country's constitution. It does this through emphasising how the NCS Principle 1 influences Learning Outcomes and Assessment Standards of the different Learning Areas, guiding the development of the lesson planning processes. Principle 1, which is the focus of this research, strongly emphasises an environmental focus in teaching and learning. Evidence of this principle can be found in a NEEP-GET description of Learning Outcomes and Assessment Standards of the Life Orientation Learning Area which supports learners in,

making links between personal hygiene, health and safety, and a healthy environment; and ... identifying ways in which their local or school environment can be improved, e.g. cleanliness, air, a garden.

(NEEP-GET, 2004b:22)

For this research I explored these links through lesson plans that would foster environmental learning with regard to active involvement of learners in meaning-making in the real and immediate context of the garden (see Chapter 4).

When considering activities in my lesson plans I also tried to make these links between the inclusivity aspect of the first principle and Learning Outcome 1 possible by being sensitive to:

- Issues of gender such as the need to include boys and girls in garden activities.
- Issues of poverty which manifest for example, in a print poor environment (South Africa, DoE, 2003). I responded to this for example by using older learners to help me develop resources. I also used the garden as one of the strategies to overcome a print poor environment through the “use the immediate surroundings as a text” (ibid.36).
- Conceptual barriers which can be problematic when working with learners of different ages.

In this way I was conscious of not perpetuating situations that exclude some learners from learning.

2.7 CONCLUSION

Of significance in this chapter was the exploration of literature regarding school food gardens in the curriculum. A history of how gardens were perceived nationally and internationally was presented with insights of how gardens have played a role in the stereotyping of gender, race and culture. The use of gardens as a response to poverty internationally and also at the level of the 4-H Programme was also considered. The value of a school garden in meeting curriculum requirements particularly in relation to the NCS (R-9) first principle and its links to Life Orientation was explored. I explored how learning theories of constructivism and situated learning, as well as environmental education processes of active learning and values education, linked to learner-centred ideologies and principles of the NCS (R-9) curriculum. These theories and processes were also explored with respect to the ideas they opened up for using the school garden in my lesson plans. In the next chapter I discuss the research methodology and methods applied in this chapter.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. INTRODUCTION

This chapter outlines the research design decisions made when investigating the curriculum opportunities that could be provided by a school food garden. I report on the research orientation that influenced this study as well as the methods chosen to gather information and on the processes undertaken in three action research cycles which I represent in a diagram. I also discuss ethics, validity and trustworthiness as these pertain to this study.

3.2. RESEARCH ORIENTATION AND METHODOLOGY

In this section I provide an explanation of the research orientation or methodology which influenced the research design. I separate the ideas in my discussion by first providing an understanding of how an interpretive research orientation became significant for this particular research. Secondly, I discuss my understanding of case studies based on literature and its relevance to this study. Lastly, I discuss action research as the methodology chosen for this study and how it helped to identify gaps that need improvement and change in my teaching and learning practices.

3.2.1. An interpretive research orientation

An interpretive case study was chosen as an orientation suitable for this particular kind of study. Terre Blanche and Kelly (as cited in Terre Blanche & Durrheim 1999) defined interpretive research as a method that describes and interprets people's feelings and experiences in human terms rather than through quantification and measurement. This was achieved through my description and interpretation of the teachers', learners' and my own feelings and experiences in the field. Terre Blanche and Durrheim (1999), commenting on how researchers do interpretive research, stated that they aim to make sense of feelings, experiences and social situations as they take place in the real world by studying them in their natural settings. Interpretive researchers rely on first hand accounts

in order to present findings in a more attractive and suggestive language (ibid.). In Chapter 4, I provide a rich detailed description of the data generated from various techniques such as focus group interviews, document analysis, journals and observations. Bassey (1999) states that numerically analysed data can be represented qualitatively through the language used to describe it. Drawing on Bassey's understanding of interpretive research I have made use of thick description and numerical analysis (see Tables 4.1, 4.3, 4.4, 4.5 and 4.6 (Chapter 4) to manage data generated and to strengthen interpretation of the qualitative data.

Interpretive researchers acknowledge that by asking questions or by observing, the situation that is being studied may change (Bassey, 1999:43). In my case for example, I interpreted the new curriculum policy by looking at the food garden with regard to its usefulness for developing the curriculum. I looked at it as a resource for learning that could be utilised as it is in the learners' immediate environment and has potential to promote active involvement of learners. I was able to address the questions I had about the curriculum opportunities offered by the garden through interpretive research (see Chapter 5). Radnor (2001, 2002) commented on the perceptions of changing situations referred to by interpretive researchers when he said that we, as professionals in the education system, construct personal meanings when grappling with interpreting the social world of education policy and make meaningful the implementation of that policy in the working practices of schools and in classroom contexts. This means that educators can be change agents in curriculum development, as I was in the context of this case study.

3.2.2 Case study research

Yin (1994) defines case study research as an empirical inquiry that investigates a contemporary phenomenon within its real life, especially when the phenomenon and context are not clear. Nisbet and Watt (1984:72 as cited in Cohen, Manion & Morrison, 2001:181) argued that a case study is the study of an instance in action in a bounded system, for example a child, a clique, a class, a school, a community. They further argue that these bounded systems "provide a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories or principles" (ibid.181). The case in this study is Lungelolethu Lower

and Higher Primary School, looking specifically at food gardens and curriculum development in the Grade 1 and 2 Life Skills Learning Programmes.

Cohen et al. (2001:181) write that “contexts are unique and dynamic, hence case studies investigate and report the complex dynamic and unfolding interactions of events, human relationships and other factors in a unique instance”. As a case study conducted with the purpose of influencing a situation, Stenhouse 1985 (in Bassey, 1999) describes action research case studies as being concerned with contributing to the development of the case or cases under study by feedback of information which can guide revision and refinement of the action. In this study I used action research to improve my practice, which I also interpreted using an interpretivist orientation. McTaggart (1991) describes this as practical action research. Action research can also be more socially critical, but I chose to focus more on practical knowledge interest to interpret and improve my own practice.

3.2.3 Action Research

Cohen et al., (2001:226) described action research as “a powerful tool for change and improvement at the local level”. They further argued that:

Action research can be used for continuing professional development of teachers to improve teaching skills, develop new methods of learning, increase powers of analysis and heighten self-awareness.

(Cohen et al., 2001:226).

Furthermore, Griffiths and Davies define action research as a focus

on the vigorous examination of a single situation, using knowledge drawn from experience and research findings to illuminate it, in order to improve it. The purpose is always to improve practice, rather than to find truths, universal or particular.

(Griffiths & Davies, 1993:45, cited in Hitchcock & Hughes, 1995: 28)

The process of action taking, observing and interpretation in this study enabled me to look for areas that needed consideration and improvement. Carr and Kemmis (1986) observed

that action research is a form of self-reflective enquiry that can be undertaken in social situations in order to improve the rationality and justice of practitioners' own practices, understanding of these practices and the situations in which the practices are carried out.

Throughout the preliminary analysis stages in all the three cycles there is evidence that I found myself being a researcher and a co-learner in the process. For example with the help of my critical friend during this process, we identified missed learning opportunities in the form of problems with the planning and implementation of the lessons.

Action research is also a form of praxis rather than practice (McNiff, Lomax & Whitehead, 1996). Praxis takes place when "action researchers are intent on describing, interpreting and explaining events while they seek to change them for the better" (McNiff et al., 1996:12). The above statement is also consistent with the interpretive researcher's viewpoint mentioned above of describing and interpreting in order to make things better (see section 3.2). As much as I aimed to influence my own practice I had the same ambitions of sharing new ideas and perceptions with the 4H Programme.

Action research is characterised by spirals of cycles of planning, acting, observing and reflecting which are not simple or linear but are interrelated, with each phase informing the action to be taken in the next phase (Carr & Kemmis, 1986). Lotz (1996) believed that action research is an orientation to research which is ongoing. In my case I designed three cycles of inquiry which I briefly explain below.

3.3 DESCRIPTION OF ACTION RESEARCH CYCLES

My study involved three action research cycles. The information gathered from reflections on the first cycle was used to inform the second and the third stages of my research as both were about planning and trialling lesson plans. In Cycle 1, I conducted focus group interviews in which I aimed to sensitise myself about the kind of lessons to plan for Cycle 2 and 3 associated with the garden context. In Cycles 2 and 3, I was engaged in the planning of curriculum-related activities, the implementation of these activities (action), observation of activities, and analysis of activities and learners' work (interpretation and reflection). The process of enquiry left me with many questions and

concerns that influenced adaptation of my lesson plans. A diagram representing the action research cycles is shown in Figure 3.1 and discussed in more detail below.

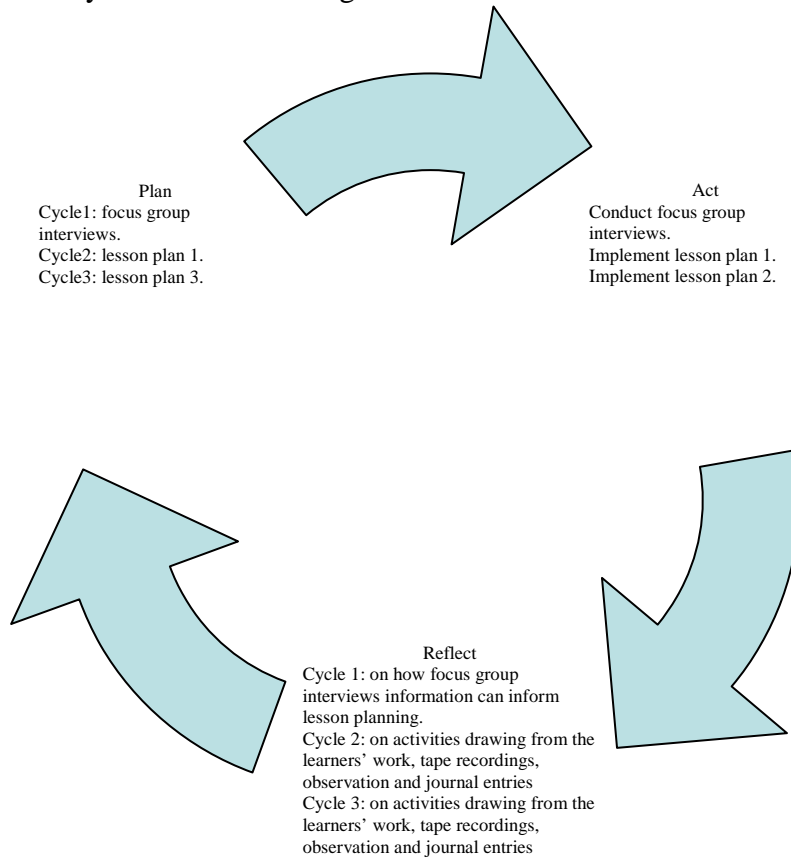


Figure 3.1: Action research cycles

Cycle 1

Figure 3.1 shows that the focus group interviews were planned and conducted in the first cycle with a group of educators from the 4-H Programme schools to probe how they understood curriculum links with school food gardens. The discussions were captured on a video tape and transcribed in my journal. A video camera was used to capture the data as raw and absolute as it could be. The focus group interviews provided insights into the kind of lessons to be planned for Cycles 2 and 3, although I did the in-depth analysis after I had conducted the lessons in Cycle 2 and 3. I did a preliminary analysis soon after Cycle 1.

Cycle 2

For Cycle 2, I planned six activities for Grade 1 around the ‘caring for nature’ theme. This was influenced by my reflections on the opinions expressed by teachers in the focus group interviews. Their opinions were that we need to have an environment that is healthy and beautiful, that our actions should acknowledge the interrelatedness between human and non-human, and that we should play a role in promoting ideas of sustainable development. I reflected on and observed the lessons in my classroom and made notes in my journal after each lesson. Photographs were taken to provide evidence that the event had taken place (McNiff et al.:1996). The tape recorder was also used as a tool supplementing sources of evidence and later transcribed in order to remind me of issues that I might have missed in my journal writing. I used the code ‘L’ to represent learners and they are numbered L1 through to L21. I analysed learners’ work to find out whether the learners achieved the Skills, Knowledge, Attitudes and Values as planned for in the activities.

Cycle 3

I used the same methods and tools as with Cycle 2. Reflective observations, document analysis and a journal were the methods used together with photographs and a tape recorder as tools to gather information for this cycle. Five activities were planned and implemented in Grade 2. These are detailed in Chapter 4. A theme on ‘the richness of soil’ was planned which was also informed by the first cycle focus group interviews. The code ‘BL’ was used to represent learners’ work in Cycle 3 and these are numbered BL1 through to BL10.

The data generation techniques used in these cycles are discussed in more detail below.

3.4 DATA GENERATION TECHNIQUES

3.4.1 Focus group interviews

Cohen et al. suggested that:

Focus groups are a form of group interview, though not in the sense of a backwards and forwards between interviewer and group. The groups are a chosen few in the population, selected with the aim to discuss a particular theme or topic that will lead to data and outcomes through the interaction of the group.

(Cohen et al., 2001:288)

The focus groups consisted of fourteen 4-H educators. I divided the educators into two focus groups. The purpose of doing focus group interviews was to create a collegial atmosphere for the interviewees to become collaborators in understanding gardening in the curriculum. The questions for the interviews were semi-structured (Appendix 1) in order to develop a situation whereby the participants would feel free to participate and, at the same time, I would be able to control the interview process. This process provided me with richer feedback through probing further with follow-up questions and making comments on some of the issues raised (McNiff et al., 1996). The sharing of knowledge and experiences of the participants provided a better understanding of the issues than I had prior to interviews.

3.4.2 Observations

I reported in section 3.2.2 above that this study was designed to investigate a single or particular case in the context of a school. As a researcher, educator and co-learner in the process, I was faced with the challenge of having to reflect on and observe my own teaching and associated learning processes, to produce a narrative on how things worked and could be improved the next time. For that reason, I used unstructured and reflective observations. McKernan (1996:60) refers to such observations as ‘participant observation: narrative’. He explained:

It is unstructured in the sense that strict controls are not placed on the context, action or the type of data collected, as well as there not being any a *priori* research

hypotheses to test in the field setting. The crucial problem is to be able to render interpretable the process of events and behaviour as it occurs naturally.

Becker (1958 cited in McKernan, 1996:60) provides further perspective on the process of unstructured observations as follows:

The participant observer gathers data by participating in the daily life of the group or organization he studies. He [*sic*] watches the people he [*sic*] is studying to see what situations they ordinarily meet and how they behave in them. He [*sic*] enters into conversations with some or all of the participants in these situations and discovers their interpretations of the events he [*sic*] has described.

I recorded my reflective observations in my research journal. This was the best way to record informal observations, as I had no time while implementing the lesson plans to make use of structured observations. According to Ezzy (2002) journals and memos are a systematic attempt to facilitate the interpretive process that is at the heart of qualitative research. Journal writing was useful to me in recording thoughts and actions immediately after every activity during the research process. Ezzy (2002:71-72) claimed that “keeping a journal and regularly writing memos encourages researchers to reflect on their emerging understanding of the data”. The tape recorder was used during Cycles 2 and 3 as a supplementary tool to my observations. I coded the tape recordings for Cycle 2 as TR1 and TR2 for Cycle 3.

3.4.3 Document analysis

The NCS (R-9) policy documents, Outcomes Based Education (OBE) textbooks, and NGO learning and teaching support material were analysed with the purpose of exploring the opportunities the documents might provide for environmental learning through school gardens.

The lesson plan I drafted for Cycle 2 was constructed from the Oxford University Press’s Life Skills books: a) a teachers resource book by Paizee, Saadien-Raad and Siegrühn (2003C) and b) a workbook book by Sotashe and Jokweni (2003). For Cycle 3, I also consulted Oxford University Press’s Life Skills books: a) Successful Life Skills Grade 2 Teacher’s Book by Paizee, Saadien-Raad and Siegrühn (2003b) b) Successful Life Skills Learner’s Book by Saadien-Raad and Siegrühn (2003a) c) Successful Life Skills: My Workbook by Saadien-Raad and Siegrühn (2003b). The Foundation Phase teacher

resource material from the Schools Environmental Education and Development Project (S.E.E.D, 2004) was also useful for planning my lesson. Patton (1995) observes that documents prove valuable not only because of what can be learned directly from them but also as a stimulus for a path of inquiry. I also analysed learners work to get rich feedback about learning associated with the school food garden and curriculum activities.

3.5 DATA ANALYSIS

I systematically collected and reflected on the data throughout the research process and that led to theory building which according to Glaser and Strauss (1967) is a grounded theory approach. Glaser (cited in Ezzy, 2002:10) argues that “the first step in gaining theoretical sensitivity is to enter the research setting with as few predetermined ideas as possible ... not to read the literature or develop hypotheses before entering the field”. Corbin and Strauss (cited in Ezzy, 2002:63) claim that “in grounded theory, the analysis begins as soon as the first bit of data is collected”. The data collected in my case was analysed as it emerged, not deduced from any product of a single research problem or hypothesis (Charmaraz, in Denzin & Lincoln, 2000). In this research project, I did undertake a literature review, and have used this to inform a commentary on the data, so have not used ‘pure’ grounded theory as originally proposed by Glaser and Strauss (1967). Later versions of grounded theory acknowledge the validity of existing theoretical perspectives in data interpretation (see for example Corbin & Strauss in Ezzy, 2002).

As my research consisted of three consecutive cycles, I did a preliminary analysis of the data generated in each cycle where I coded and categorised data into emerging issues or themes (see Chapter 4). Strauss and Corbin (1997) believe that coding helps in finding or identifying the commonalities and contradictions in the data generated. The synthesis of the emerging issues was further developed into analytical statements that helped to make sense of the data and reflect whether the research question had been answered (see Chapter 5). According to Bassegy (1999:70), “a useful way of handling and trying to make sense of the data is analysis which seeks to condense data into meaningful statements”.

3.6 ETHICS AND TRUSTWORTHINESS

I informed teachers in schools working within the 4-H Programme about the purpose of my research and requested their participation in focus group interviews (see section 4.2.1). I asked them to fill in consent forms where they agreed that they wanted to be part of the interview process (Appendix 2). I asked permission from the principal and the school governing body to use the school as a site for my research with the motivation that I was trying to improve my teaching practices for the benefit of the school and learners. As suggested by McNiff et al. (1996) researchers should check with the principals and managers before undertaking research that is connected with their organisation in order to reach a consensus about what they may and may not do. I also asked the parents of the learners to sign letters of consent giving me permission to work with their children (Appendix 3). This letter included an explanation of the research goals. These letters were distributed and explained at a meeting at school with the permission of the principal. Some parents signed the letters on the day of the meeting. The need for this letter was motivated by McNiff et al. (ibid.) who advocate that when working with children or other people under supervision, permission has to be received from parents or other supervisors to involve those people in the research. For Cohen et al. (2001:51) such informed consent “protects and respects the right of self determination and places some of the responsibility on the participant should anything go wrong in the research”. Bassey (1999) advocates this process as respect for democracy. Furthermore the names of the participants were not revealed so as to assure the participants that the information they gave remained anonymous. By ensuring anonymity I was advocating Bassey’s (1999) view of respect for persons in case study research.

3.7 VALIDITY

For this research, I am working within an interpretive orientation in a practical research design, as described above in section 3.2. Thus it is of significance to validate this study along the lines of interpretive validity as described by Maxwell (1996). He states that “Interpretive validity” can be described as:

appropriate primarily because this aspect of understanding is most central to interpretive research, which seeks to comprehend phenomena not on the basis of

the researcher's perspective and categories, but from those of the participants in the situations studied.

In this research I tried to put the participants at the centre of what was being done and explored by not necessarily detaching myself as a researcher but by respecting and understanding their and my own experiences in the field. My role as a researcher was to mediate and facilitate learning while researching and interpreting my own practice.

According to Maxwell (1996:290) accounts of participants' meanings are never a matter of direct access, but are always *constructed* by the researcher(s) on the basis of participants' accounts and other evidence. Based on this understanding the information, which I reported for Cycle 1 focus group interviews in Chapter 4, was constructed by me. However, I believe the constructions I have made were as true to the intended meanings of the educators because the video transcript reflected detailed information on what took place and what was discussed. Through careful transcription and thick description (Lather, 1986) I was able to ensure a trustworthy account of those focus group interviews. As reported in Chapter 4, I relied on my journal notes and the tape recordings for the observations and processes involved in capturing the data for Cycles 2 and 3. My journal notes (Journal, 09-05-2005) (see example in Appendix 4) reflected how I probed learner's meanings of drawings and interpretations in order to ensure that I was realistically interpreting their meanings.

The interpretations of the data were also triangulated through the use of multiple methods of data collection because "it is essential that the research design seek counter-patterns as well as convergences if data are to be credible" (Lather, 1986:67). I used various techniques such as focus groups interviews, observations and document analysis to gather information. Various tools of research such as the video, tape recorder, photographs and journal writing also supplemented these data generation methods. I also applied Lather's (1986) concept of catalytic validity through my intention to know reality in order to better transform the situation (*ibid.*), see Chapters 4 and 5.

3.8 CONCLUDING SUMMARY

The story narrated above forms a true reflection of the processes undertaken to fulfil the objectives and goals of this study. The data analysis process in this study is influenced by

a grounded theory approach. Action research has been described as a useful and practical approach for understanding a particular situation in order to improve on it, and this approach has been widely used in classroom practice research (McNiff et al., 1996). Through an interpretive action research process, I designed a study to investigate the implementation of the new curriculum policy within the context of my school with a focus on school gardens. I report on how I applied ethics in my study by recognising the rights of my participants through getting permission for their involvement in the study and not revealing their names. I also report on how trustworthiness was considered through using multiple research methods, thick description and triangulation.

CHAPTER 4

REPORTING AND ANALYSING THE ACTION RESEARCH CYCLES: USING THE SCHOOL GARDEN FOR TEACHING AND LEARNING

4.1 INTRODUCTION

This chapter describes the action research process and illuminates emerging issues from each cycle. In the first section I report on the focus group process of Cycle 1 and on the findings from the focus group interviews, which were conducted with the educators from the 4-H schools. In Cycles 2 and 3 I report on the processes and findings from the planning and implementation of the lessons in Grade 1 and Grade 2 respectively. The last section provides a synthesis of the issues emerging from the three cycles of research.

4.2 CYCLE 1 - EDUCATORS' PERCEPTIONS OF THE LINKS BETWEEN THE SCHOOL FOOD GARDENS AND THE CURRICULUM

4.2.1 Planning and implementation

To start the research process, I organised a meeting for educators participating in the 4-H Programme to decide on the date and the venue suitable for the focus group interviews I was to conduct. In that meeting, I explained my role as a researcher interested in knowing how the 4-H Programme, in particular the food gardens, is supporting curriculum-linked activities in the schools. I also explained to the educators that I did not intend to impose changes in the 4-H Programme but hoped that through my research findings, I would be able to illuminate needs and opportunities for improvement in the 4-H Programme. I explained to the educators that the information from the focus group interviews would help me to plan lessons and that the lessons would be trialled at Lungelolethu School with the aim of reflecting on my own practice.

The focus group interviews were held on the 14th April 2005 at the agricultural office hall (see section 3.4.1). Out of the 22 4-H educators who had committed to attend the meeting,

14 attended. Two schools sent two educators. The educators' attendance revealed that there are schools that are interested in transforming and improving their situations when there are chances to do so. For example, after the interviews some of the educators asked if we could form a cluster in which we could help each other to design lesson plans that would incorporate the school garden into curriculum work (Journal 14-04-2005).

I gave the consent forms to the educators to sign, showing that they had understood and agreed to be part of the study. I divided educators into two groups and named them focus group one (FG1) and focus groups two (FG2).

The purpose of focus group interviews as stated by Richard et al. (2000:5) is "a better way to understand how people feel or think about an issue, product, or service". I told the participants to feel free and comfortable during the process. All the members of a group were expected to participate in discussions, and I also explained that there was no right or wrong answer. I explained to them that a video camera would be used to capture all the information that would be shared. I started posing questions as planned in the interview schedule (Appendix 1). There was a little tension from the groups during the first question, which I suspect was because the situation was somewhat unfamiliar. I encouraged the groups to speak isiXhosa so that every one could understand what was being said. I noticed as the process went on, that the individuals were no longer hesitating and elaborated on their arguments, as they felt more comfortable with the process. Unfortunately the group discussions were not clear on the videocassette. The videocassette captured the information when one member from each reported back to the larger group, so I was able to capture the most important points in the discussions.

4.2.2 Feedback from focus group interviews

In the next sections I consolidate and report on the feedback from the focus group interviews, according to the following sub-themes identified through an analysis of the focus group interview data:

- Role of school gardens in responding to environmental issues,
- Life skills developed by school gardens,
- Opportunities provided by school gardens for professional development,

- Opportunities provided by school, gardens for meeting curriculum requirements,
- Opportunities for developing school /community relationships, and
- Clarifying concepts.

4.2.2.1 Role of school gardens in responding to environmental issues

The respondents indicated that the garden is a means to address environmental issues in their schools and communities. Both the groups stated that the food gardens are useful for the eradication of poverty and that some of the vegetables are sold to address financial problems in schools, which are small and have no money.

The groups noted that in their communities most people are not working and the children come to school with empty stomachs. The hunger in these communities encouraged schools to start food gardens to provide vegetables for the learners. FG1 said that learners have to know which plants to plant and what these plants do in our bodies. They said food from the garden promotes health in schools and help to fight diseases like HIV/AIDS.

They also mentioned that a healthy environment (as recognised in LO1 of Life Orientation and Principle 1 of NCS (R-9)) creates opportunities to teach about recycling and beauty. FG2 stated that an environment with litter can't be healthy. They indicated that papers and peels have to be thrown on a compost heap for use in the garden.

4.2.2.2 Life skills developed by school gardens

Educators from the focus group discussions indicated that learners develop skills when the school food gardens are integrated into the curriculum. Below I report on the skills that they mentioned when learners are learning in the garden.

Respondents indicated that the 4-H Programme develops learners to become young farmers, and respondents in FG2 stated that young farmers are necessary for agriculture and the economy. Respondents also indicated that the cooking in schools provides opportunities to develop consciousness of the colour and appearance of food for the hotel industry. They mentioned that on some days when the food is cooked for the learners, the

learners are taught about what to include in a healthy meal. The garden also provides opportunities to develop agricultural skills through projects like animal handling and handwork. Teamwork was another idea that came up from the groups. They indicated that learners are seen to be working in the garden not only as individuals but also as a group sharing ideas about what to do in their plots. FG1 indicated that learners acquire skills of communication through the garden, in the process using both English and their mother tongue, which is isiXhosa. Respondents in FG2 indicated that the garden encourages cleanliness amongst learners as the plots are arranged and prepared to show beauty, cleanliness and attractiveness, and learners are stimulated to be independent citizens.

It was also noted that the co-operation between schools and communities could encourage unemployed youth to understand that they can do something with their hands in order to earn money (FG2), indicating entrepreneurial potential in school gardens.

4.2.2.3 Opportunities provided by school gardens for professional growth and incentives

In FG2, group members noted that the Department of Education does not support school gardens, not even through its Special Programmes Unit (SPU) project. Another problem associated with school gardens is that they are regarded as an extra-curricular activity. Despite concerns about the extra-curricular nature of school garden work, educators reported that there were two good incentives for involvement in garden work. Firstly, they commented that educators could be evaluated using the school food gardens to achieve the Integrated Quality Management System (IQMS) requirements (FG1). The IQMS is a system for educators used by the Department of Education to appraise educators' performance (this IQMS system will be discussed in greater detail in section 5.2.2). Educators on the programme start with self-evaluation: they get time to do introspection of themselves, thereby gearing themselves towards achieving goals set by departmental norms. The educators viewed the IQMS system as an opportunity for critical thinking, creative thinking and self-evaluation.

Educators felt that a second incentive for their involvement in school gardens would be a financial incentive in recognition of work that adds value to the schools through creating a good impression.

4.2.2.4 Opportunities provided by school gardens for meeting curriculum requirements

FG1 stated that the Department of Agriculture helped the schools by introducing the 4-H programme with food gardens as a resource for learning in their schools. Learning in school gardens enables learners to be fully involved in the learning process and to understand environmental issues in their context. Educators mentioned, for example, that Mathematics is made easier for the learners in the garden as the plots are designed in shapes such as rectangles and learners learn how to measure the length and the width of the plot. FG2 mentioned that the food garden contributes to the teaching of Economics and Management Sciences. They believed that understandings of words like budgeting, selling, profit and loss could be explored in an Economics and Management Sciences lesson through garden produce marketing and sales.

FG2 stated that Natural Sciences concepts such as soil types could be taught before the learners' plant plots. In Natural Science they can also learn about the insects and animals that live in soil and the importance of aerated soil for the survival of these organisms. Furthermore, FG1 advocated that learners can learn about how ecosystems work, and develop an understanding that in order for life to continue, we need to have birds, insects, animals, and people living together. The learners could explore the correct seasons for planting different plants. Both groups mentioned that in Life Orientation learners learn about vegetables and how they help children promote and achieve healthy lifestyles and diets. FG1 mentioned that discipline is also taught through Life Orientation. They mentioned that discipline is shown through learners taking responsibility for watering the garden in the morning and during the weekends.

To understand the curriculum and the food gardens the educators were expected to explore the links between the NCS (R-9) policy principles and the Learning Outcomes (LOs) and Assessment Standards (ASs) in Learning Areas using the school garden to explore possible learning activities. Responses from both the groups showed that there are links between the Principles and the Learning Outcomes. FG2 gave an example using Principle 3 'Outcomes Based Education' (OBE) of the NCS (R-9) and the Languages Learning Area. Highlighting the importance of learner-centred education in support of

this principle, the group described how Languages LO1 ‘Listening’ and LO2 ‘Speaking’, where learners have to listen to one another and communicate their views, can support learner-centred activities in the garden.

The response from FG1 showed links between Principle 1, which is ‘an understanding of the interrelationships between social justice, a healthy environment, human rights and inclusivity’, and LO1 of Life Orientation which is ‘Health Promotion’. The group stated that the garden addresses health issues through consideration of vitamins and nutrients and healing properties of plants. For example they explained that garlic can be eaten to boost the immune system.

The discussion also indicated that other Learning Outcomes and Assessment Standards could be achieved using the food gardens. FG1 gave an example of a lesson where learners were taught about cleanliness through a competition to keep their plots clean. They linked that lesson to LO4 of Life Orientation, which is ‘personal development’, and AS2, which requires learners to describe their own body in a positive way. FG2 linked LO1 ‘Number Operations and Relationships’ and AS1 ‘counting’ of the Mathematics Learning Area to the garden (ibid.). This was through a suggestion that when learners are busy working in the garden they could count how many seedlings are needed in a plot. They indicated that asking learners to count how many seedlings have died and how many are left so that they know that other seedlings could replace those which wilted, could follow this.

4.2.2.5 Opportunities for developing school / community relationships

The groups viewed school gardens as an opportunity to strengthen cooperation between the school, the community and government departments. They argued that their schools no longer operate as isolated entities but are places to accommodate different stakeholders. FG1 noted that there are also stakeholders such as businessmen who sponsor schools to run food gardens. Umthiza business enterprise, for example, is sponsoring some of the schools with packets of potato seeds.

4.2.2.6 Clarifying concepts

During the interview process, I found that the educators' responses were not always addressing what was asked. There were new concepts that the educators did not understand such as 'contextualising the curriculum' and 'active learning'. For example, the response which was given to the question on contextualising the curriculum showed that educators understood the concept as a way to simplify the curriculum whilst the concept is much more complex (see section 2.5.2.1). Active learning was understood as just physical involvement in a learning activity, but there are many aspects to the concept as discussed in section 2.5.2.3.

4.3 SIGNIFICANCE OF FOCUS GROUP INTERVIEWS FOR CYCLES 2 AND 3

In chapter 1, I introduced the purpose of this study which stated clearly that my intentions are to understand the NCS (R-9) curriculum better using the school food garden. I was therefore intent on exploring the links between the garden and the curriculum. The focus group interviews were of significance in exploring these links as I was expecting them to make links between NCS Principle 1 and LO1 of Life Orientation. The links between the garden and the curriculum were further explored by the group participants suggesting links with other Learning Area Learning Outcomes and Assessment Standards. These links influenced the choice of topics which for example emphasised the right of all things in nature to live; and content knowledge such as knowledge of soils which were included in the lesson plans developed, as reported in Cycles 2 and 3.

I considered it significant that the garden is sometimes considered to be an extra-curricular activity by educators (see section 4.2.2.3). This supported the need for my research which aimed to explore how gardens can be used as a resource to improve curriculum work. Thus I hoped to show in my lesson plans that the food gardens are not there to add something new to the 'formal curriculum' but are a 'resource' for the improvement of teaching and learning.

4.4 CYCLE 2 - TRIAL LESSONS FOR GRADE 1

4.4.1 Planning and implementation

As a multi-grade teacher, teaching Grade 1 and 2, I planned a lesson for Grade 1 in Cycle 2 and a Grade 2 lesson was planned for Cycle 3. The lesson I planned for Cycle 2 was informed by the focus group interviews where a suggestion was made for a focus on the right of all things in nature to live, and where the importance of ecosystems was highlighted (see section 4.2.2.4). Therefore my lesson plan focused on developing respect for living and non-living things in the environment.

I consulted different documents to plan this cycle. I went through the Life Skills Outcomes-Based Education textbooks at school to look for lessons that would suit the level of my learners. The lesson plan I drafted was constructed from the Oxford University Press Life Skills books: a) a teacher's resource book by Paizee, Saadien-Raad and Siegrühn (2003b) and b) a learner's book by Sotashe and Jokweni (2003). The lesson plan topic was about 'caring for nature', which I felt was appropriate for the garden context (Appendix 5). I used also the Foundation Phase teacher resource material from the Schools Environmental Education and Development Project (S.e.e.ed, 2004). I used the analysis of Principle 1 and LO1 of Life Orientation of the NCS (R-9) documents (see sections 2.5.4 and 2.6) to plan the lesson – as dictated by my research focus. The lesson plan was designed to teach the learners to understand the relationships between health and the environment (see section 2.6). LO1 in this lesson plan was interpreted together with Assessment Standard 2 (AS2), which says that achievement of the outcomes is evident when the learner 'explains steps to ensure personal hygiene and links these steps to environmental health' (South Africa, DoE, 2002c).

There were different activities for this lesson plan, which were performed over six days. I have used the code L for the names of learners so as to ensure anonymity in my research as discussed in section 3.6. The code TR was used to represent tape recordings of observations.

4.4.2 Description of activities and preliminary data analysis

4.4.2.1 Activity 1: Story about the Amazing Marula Tree

- *Activity description*

For this activity, I used a story about the ‘Amazing Marula Tree’ (Appendices 6a and 6b). The story introduced the concept of ecosystems through showing how living and non-living things depend on each other. The intention of this story was to illustrate that people can utilise but not destroy the natural environment as people; animals, insects and birds destroyed the Marula trees. The story was in English and translated into the learners’ language *isiXhosa* because the language of learning in Grade 1 is the learners’ home language. I read the story on the first day of the activity and noticed that the learners did not respond to the questions asked in relation to the story (Journal, 05-05-2005). I decided not to continue with the lesson on this day as the story was to provide learning opportunities for the coming activities.

I asked and gave two Grade 7 learners pictures provided in the story to draw and colour on big charts so that they looked attractive for my learners. Instead of reading the story the next day, I narrated, showed the pictures and made gestures to arouse the interest of my learners. The learners showed interest in understanding of the story as they listened attentively and responded to the questions asked (Journal, 06-05-2005).

- *Preliminary data analysis of Activity 1*

On analysis of my journal notes, I noticed some shortcomings in the way I introduced the story the first time and how I managed to address these shortcomings. That is:

- The story was too long and needed to be summarised in order to develop learners’ listening skills at a more appropriate level.
- Narrating the story was more successful because I was able to make gestures and imitate what was said in the story. In this way, I drew on learners’ familiarity with mythological stories being narrated instead of being read – as is traditional in their culture.

- Visual reinforcement through using pictures was of great help in making meaning and developing understanding of the story.
- This activity would have been better utilised in order to meet the requirements of LO1; AS2 of the Life Orientation Learning Area, integrated with Social Sciences LO3: AS3 (see Table 1.1). The Life Orientation LO1 and AS2 provided more opportunities than I had originally intended for this activity. There were values suggested by this activity that learners should understand. These included an understanding that they could utilise the resources but not destroy them, which added to the concerns and challenges of sustainable development as discussed in section 2.2.2. With a deeper understanding of ecology I could have helped learners to probe the concepts of sustainability in more depth. I could have asked leading questions for example about interrelationships within ecosystems to develop learners' understanding of ecosystems. This would have helped learners to make informed decisions by proposing solutions or alternatives that would reduce the risk to personal health or safety.

4.4.2.2 Activity 2: Identifying environmental issues

- *Activity description*

The learners were given worksheets from the books by Sotashe and Jokweni (2003) which contained paired pictures of activities that could be interpreted as the right or wrong way to care for nature (Appendix 7). They were asked to discuss these pictures and to explain why they thought some pictures were right and others wrong. They also discussed what could happen in nature if people did wrong things all the time. The groups reported their discussions about the pictures to the class (see Figures 4.1 and 4.2) but at this stage did not complete the worksheets. The purpose of the exercise was to explore if they could identify environmental issues.



Figure 4.1 Learners discussing



Figure 4.2 Learner reporting back

The learners then continued the activity working as individuals. Each learner was then asked to complete the worksheet and to choose one picture of interest to him or her and write a sentence about it. In their sentences they explained what was happening in the picture (Appendix 7). Their sentences were assessed according to whether learners interpreted the pictures, as I understood the textbook had intended them to be interpreted. Table 4.1 shows a summary of the learners' interpretations of the environmental issues represented by the pictures.

Table 4.1 Identifying environmental issues using pictures

Issues identified in pictures	The number of learners per issue
Littering	14
Picking flowers	8
Killing wildlife	14
Wasting water	14
Vandalising trees	6
Playing with water	12

Total number of learners 14

- *Preliminary analysis*

Picture interpretations by learners: Some of the pictures in Activity 1 were interpreted in different ways. Table 1 shows that picking of flowers, vandalising trees and playing with water as the issues that not all learners interpreted as expected. The learners gave different reasons. (Journal, 09-05-2005). The reasons I got were:

Picking flowers:

L1, L2 - the flowers are picked at home to put in a vase.

L7, L8, and L9 - the child in the picture picked the flower to plant at another place.

L13 - this learner associated the flowers with those brought to school on Valentine's Day. I asked what he thought the flowers were for on 'Valentine's Day' and he told me that he did not know.

Vandalising trees:

There were eight learners that did not identify vandalising of trees as an environmental issue. L1, L2, L5, L7, L8, L9, L11 and L14 thought the child in the picture was picking some fruit from the tree and that there was nothing wrong with that.

Playing with water

L13 and L14 did not see anything wrong with the child using a hosepipe because they thought the child was watering some flowers.

In my analysis I considered how the lesson might have been taken further in future. The lesson could have been taken further with a discussion on the right time to pick flowers, how flowers reproduce through seeds, and how it is alright to pick small samples of plants in order to propagate them. The learners could have also learnt about the sustainable harvesting of plants through considering the way in which plants are harvested and the amount that is harvested. On the issue of playing with water, a discussion could have been generated about how to have fun with water without wasting at the same time. On reflection I felt that Life Orientation LO1 and AS2 were not successful and that Social Science: Geography LO3, AS1 (see Table 1.1) would have been a more appropriate Learning Outcome. For example, as the learners were able to identify and describe environmental issues that they saw in pictures, they should have told how these issues affect their personal health or safety in the school or the home environment.

I also identified that LO2; AS8.2 and LO4; AS2.2 of Languages – English Home Language (ibid.) could also have been met through this activity. The learners were able to communicate their ideas confidently and effectively on behalf of their groups. They were also able to write down their ideas in sentences about the environmental issues they identified. This means that the lesson focused more on the Languages Learning Area

integrated with Social Sciences Geography rather than the Life Orientation Learning Area. This indicates that Life Orientation is not necessarily the best Learning Area to respond to a variety of environmental issues as it is prescriptive in the lower grades and thus limits the issues to those prescribed, for example ‘hygiene’.

I noticed that not all learners participated equally as some learners dominated the discussion. I walked around the groups and encouraged the quieter learners to respond (Journal, 09-05-2005). The age of the learners was also a problem in group discussion. The under age learners did not want to talk and I was not sure whether they understood what was discussed in their groups.

4.4.2.3 Activity 3: Response to environmental issues: picture drawing

- *Activity description*

The learners were asked to think and decide about something that they would enjoy doing for nature. They drew pictures and wrote sentences about their drawings to show what they had chosen to do (see Figures 4.3 and 4.4).

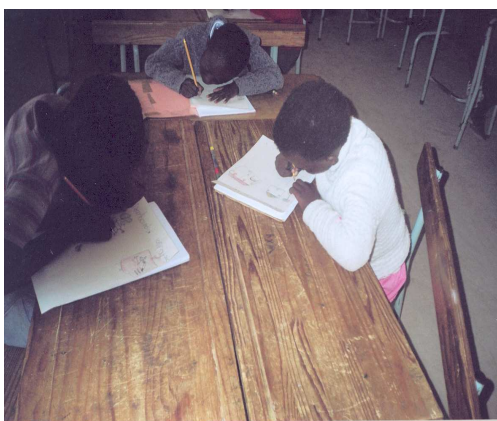


Figure 4.3 Learners busy drawing

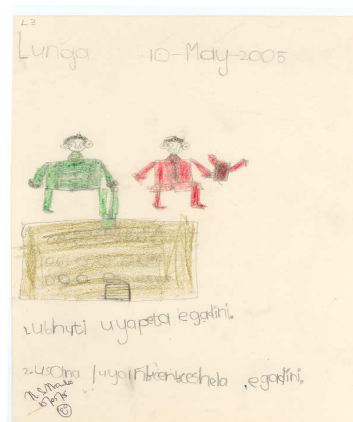


Figure 4.4. Sample of drawings

Table 4.2 Summary of the learners’ action for nature drawings

Action for nature	Learners
Watering garden	L3, L8
Picking up litter	L1, L2, L5, L8, L10, L14, L15, L16
Digging the garden	L1, L3, L5, L11

Smelling flowers	L1
Sitting under the tree	L1
Watering flowers	L9
Raking grass around the school	L4

The drawings and sentences on the action for nature activity (see Table 4.2) reflected that Grade 1 learners are able to select actions to address issues in nature. From this activity learners displayed knowledge and understanding of environmental issues in their context.

Actions such as smelling flowers, sitting under the tree, watering flowers and raking grass around the school were identified as possible actions by a very small number of learners (e.g. one learner each). Picking up litter was the action highlighted by more learners than any other action, watering the garden was the next most favoured action. Possibly those learners that drew pleasurable things such as smelling flowers and sitting under a tree were thinking further than action in the sense of alternative ways of being in nature.

Through analysis I identified other LOs and ASs that the activity could be linked to. As much as the activity helped to achieve the stated LO1 and AS2 of Life Orientation, there were possible integrations across other learning areas that could have made LO1 and AS2 more successful. For example I worked with Geography LO3; AS3 (see Table 1.1). This outcome has a strong focus on environmental health, but also links to personal health, particularly the issue of litter as an environmental issue. To be free of litter reduces risk of personal injury and pollution of air, water and soil with which learners have direct contact.

4.4.2.4 Activity 4: Responding to environmental issues

- *Activity description*

This activity was planned to narrow down and reinforce what was learnt about doing good things for nature. On the worksheet, as individuals, the learners were asked to suggest three priority actions for nature. They wrote three sentences deciding on what actions they would enjoy doing for nature as the class group (Appendix 8). It was also an exercise to develop learners' ability to prioritise, as there were many suggestions from the

drawings. Only three suggestions were to be chosen as the most practical and popular exercise that could be done by the class. In order to decide on the class priority I collected the worksheets and added up the total number of references to each activity. As shown in Table 4.3 the total number of issues does not add up to 36 as some learners repeated issues. Issues in order of priority are listed in Table 4.3 below.

Table 4.3 Action for nature priority issues

Suggested action for	Learners
Picking up litter	12
Planting in the garden	9
Watering the garden	7

Total number of learners 12

We picked up litter around the school including the leaves that had started to fall because of the winter season. We threw the papers and the leaves into the garden compost but things like plastics and tins were burnt. The suggestion of throwing leaves in the garden was made in the focus group interviews (see section 4.2.2.4). We decided that from then on, we would come to school early so that we could pick up litter around the school before school started (Journal, 10-05-2005). The other two prioritised actions were taken at a later stage in the lesson plan.

- ***Preliminary analysis***

By looking at the priority issues listed in Table 4.3, I found that the discussion which we had when we were doing Activity 1 contributed to learners thinking of the priority issues. For example, we discussed that to prevent soil erosion we need to plant trees and have vegetable gardens. The learners also showed in their responses for this activity that Activity 3 influenced the choice of issues. Learners in Activity 3 wrote sentences for their drawings telling why they had chosen to do things that they had drawn. For example L2 wrote for her drawing “*umntwana wesikolo ulahla amaphepha emgqomeni ukhathalele indalo ka Thixo*” (Journal, 10-05-2005). This means that the child throws the papers in the dustbin because he cares for God’s creation. This activity where learners were required to suggest priorities contributed to learners’ ability to make informed decisions as required by Life Orientation LO1: AS2.

4.4.2.5 Activity 5: Designing and developing garden beds

- *Activity description*

Before we went to the garden we discussed what would happen if we planted in weedy or rocky soil. We agreed that the soil had to be healthy before we planted in it. We discussed the possibility of designing our garden using different shapes, which was followed by starting work in the garden.

The learners were grouped and asked to name themselves according to shapes (e.g. triangle, square, rectangle and circle). In the school food garden they designed plots according to the shapes they belonged to. They prepared their plots for planting and reminded of the things we discussed in class about healthy soil and beautiful gardens. As mentioned above in section 4.4.2.4, during this period the leaves from the trees in the school yard began to fall and the learners collected them and threw them in the garden to fertilise the soil. I told them that when the leaves are mixed with soil they would decompose and fertilise the soil. They communicated how to design their plots in their groups and took turns to use garden tools whilst others were weeding the plots. I was walking around the groups asking probing questions about the shapes they were creating to help learners to design the correct shapes (see Figure 4.5).



Figure 4.5 Learners designing plots

- *Preliminary analysis*

The learners were excited to work in the garden whilst learning was also taking place. For this activity, the second part of the AS (knowledge about personal hygiene) was not achieved. There was no discussion that was linked for example to learners considering their personal hygiene as they learnt about healthy and beautiful soil.

4.4.2.6 Activity 6: Planning for planting in the garden

- *Activity description*

The lesson in the garden about healthy soil and shapes was continued in the classroom through learners' drawings on blank sheets of paper. They were expected to suggest in their drawings what vegetables they would like to plant in their plots in the garden. They coloured in their drawings to see if they knew the different colours of the vegetables (Appendix 9). Table 4.4 summarises my assessment.

Table 4.4 Summary of assessment of learners' work

No. of learners that got colour correct	8
No. of learners that got shape correct	16
No. of learners that successfully drew realistic- looking vegetables	9
No. of learners that used the space in the shape appropriately	15

Total number of learners 16

- *Preliminary analysis*

This activity could have been used as the planning activity for planting in the garden. It was a missed learning opportunity in the sense that the learners planted vegetables in the garden that were different to those they had drawn. The planting took place in the following lesson plan, but was not researched as it was outside the scope of the study.

The fact that some learners used inappropriate colours for their drawings of vegetables showed a loss of connection between the real and the abstract (Appendix 9). In future, I

will bring concrete material (real vegetables) or even packets of seeds to enable the learners to draw the correct colours of vegetables.

I could have also integrated Life Orientation LO1: AS2 with LO1: AS10.1 and 10.2 of Arts and Culture (see Table 1.1). Assessment as shown in Table 4.4 provides evidence that the activity was intent on developing learners' knowledge of vegetables, while developing drawing skills. Learners were expected to recognise colour and represent items spatially in their drawings.

4.5 CYCLE 3 - TRIAL LESSON FOR GRADE 2

4.5.1 Planning and implementation

The same NCS (R-9) documents that were consulted to plan Cycle 2 were useful for this cycle as well (see section 4.4.2). I also consulted Life Skills books by Paizee, Saadien-Raad and Siegrühn (2003b), Saadien-Raad and Siegrühn (2003a & b) and the Schools Environmental Education and Development Project (S.e.e.d, 2004) As with Cycle 2, this cycle was strongly influenced by the Cycle 1 focus group interviews. As noted in section 4.2.2.4 teachers envisaged opportunities for learning about ecosystem health in the garden. As healthy soil is an important aspect of ecosystem functioning, I decided to focus my next lesson plan on the 'richness of soil' (Appendix 10). As with Cycle 2, the lesson plan was designed in order to address the requirements of LO1: AS2 of the Life Orientation Learning Area. The lesson took seven days to implement with different activities. I have used the code BL to represent the learners, and code TR2 to represent tape recordings for this cycle.

4.5.2 Description of activities and preliminary data analysis

4.5.2.1 Activity 1: Describing Soils in the Classroom

- *Activity description*

For this activity I brought a selection of different types of soils to class. Prior knowledge was mobilised in this activity through the learners describing different types of soil using

their senses to differentiate between the colour, texture and smell, and guess where the soils were found. The samples were brought from 1) a nearby river, 2) the school vegetable garden, 3) dongas around the school, 4) the road next to the school and 5) the ground outside the classroom. The words that the learners used to describe the soils were written on the chalkboard. The learners used their first language isiXhosa to describe the soils. I translated the words into their second language, which is English. The reason for the translation into English was because the learners' books were written in English. I explained the meaning of the words as I wrote on the board. The discussion was taken further by asking learners to look at a handout from Saadien-Raad and Siegrühn (2003a:41) and to describe the soils they saw in the pictures (Figure 4.6). After the discussion they completed a worksheet (Appendix 11) referring to the pictures they discussed in class.

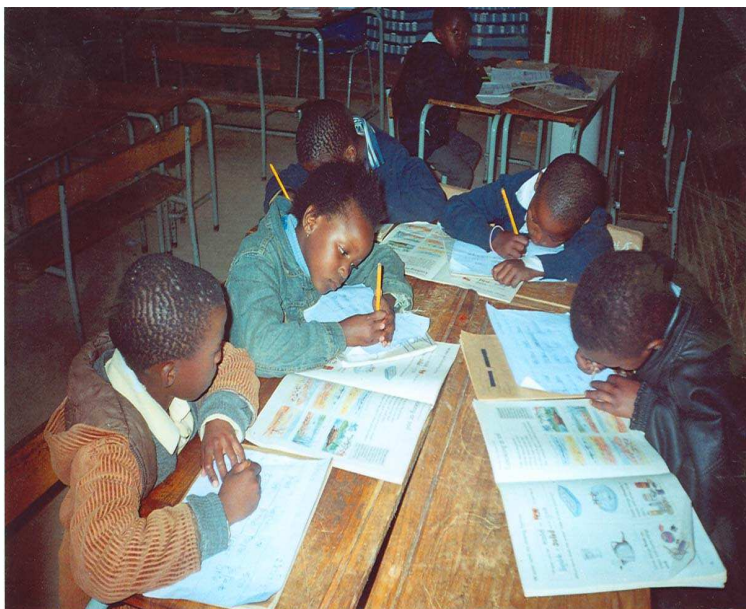


Figure 4.6 Describing soils in pictures

I assessed the learners' worksheets using faces. The faces were categorised according to the NCS (R-9) national code, which is as follows:

- ☺ Smiley face – achieved
- ☹ Straight face – partially achieved
- ☹ Sad face – not achieved.

(For each description of soils in six different pictures) the faces were allocated these marks:

- Achieved – ranges from 6-4
- Partially achieved – ranges from 3-2
- Not achieved - ranges from 1-0

The faces for the overall interpretation were as follows:

- Achieved ranges from 12-24
- Partially achieved ranges from 11-8
- Not achieved ranges from 7-0

Table 4.5 Recorded learners' Assessment of soil identification

Learners	Type of soil	Colour	Texture	Where do we get	Overall assessment
BL1	☺	☺	☺	☺	☺= 24/24
BL2	☺	☺	☺	☺	☺= 24/24
BL3	☺	☺	☺	☺	☺=23/24
BL4	☺	☺	☺	☺	☺=23/24
BL5	☺	☹	☹	☹	☹=10/24
BL6	☺	☹	☹	☺	☺=14/24
BL7	☹	☹	☹	☺	☺=13/24
BL8	☹	☹	☹	☹	☹=9/24
BL9	☹	☹	☹	☹	☹=3/24
BL10	Absent	Absent	Absent	Absent	Absent

- *Preliminary Analysis*

I transcribed the audiocassette of this activity and analysed it to see if the learners could use their everyday experience to describe soils. The discussion from TR2 showed that learners had knowledge about the different types of soils found in their own immediate environment. Evidence of this is the way they described the two different types of sand in terms of colour and texture and were able to tell the places where they were found. For example, one sand was yellow because it was found in the stream and the other sand was brown because it was from the river (TR2). We discussed the features of sand that comes from the sea and some learners knew that sand from the sea is also yellow. For the texture

of soil, the learners were able to tell that clay soil is hard. For example I asked what clay feels like and what could happen if I threw it at them. One learner said “*uqinile kwaye ndingaphuma ingongoma xa unokundibetha ngawo*” (TR2). This means that clay is hard and she can be swollen if she gets hurt.

My assessment of this activity was initially a little misleading in terms of analysing this activity because 6 out of 9 learners were given an ‘achieved’ symbol. However, they had not achieved to the fullest extent possible in this category. A more qualitative analysis evident in my journal notes indicated that during the discussion learners were not able to identify soils easily from pictures compared to the real soil samples. Only through significant prompting were learners able to make the identification (Journal, 25-07-2005). The failure of all learners to identify soils correctly could be for many reasons, and it should not necessarily be assumed that the lesson was not successful in terms of understanding and skills developed. In some cases learners did not finish their work although I allocated some extra time to work on the activity. For example learners L5, L6 and L7 did not complete the worksheet.

Other learners completed the worksheet but were still unable to identify the soils. This could be due to the quality of the pictures they used. These pictures created confusion, as we came across colours in the pictures different from the real samples we had worked with. For example picture two showed loam soil with a red colour different from the black or grey loam soil taken from the school garden. I asked if they had seen red soil. Some responded by saying they had seen it at the back of their homes, next to the dams and in the forest. I told them that those soils are also loam soils. A lack of scientific knowledge on my side as an educator was evident in the description of soils here. It was not easy to describe other soils in pictures as there were many colours shown and they did not know exactly which part was the soil. For example, for picture six I had to explain that the place is a desert. In a desert, there are no stones, no grass, no trees and it is a very dry place. The soil from the desert is sand and different types of sands can be found in the desert. I found that these pictures had limitations in terms of facilitating discussions about soils because they did not represent the soils in terms of particle size. It is in fact particle size and subsequent texture which is the key defining feature of soil type. This could have contributed to the fact that learners were unable to identify soil types correctly.

LO1: AS2 of Life Orientation was not achieved during this activity as expected and in retrospect I feel that it was an inappropriate curriculum link. At this stage learners were not expected to carry out investigations about soil in order to decide whether to say the home and school environment are healthy.

In the process of analysis Geography LO1: AS2 (see Table 1.1) was identified as another possible integration opportunity within this activity. A skill outlined in this assessment standard was evident when learners demonstrated a sense of place through describing soils taken from their immediate environment. With better Learning and Teaching Support Material (LTSM) they could achieve the AS.

4.5.2.2 Activity 2: Field walk - Investigating types of soil

- *Activity description*

Learners participated in an activity taken from their workbooks (Saadien-Raad and Siegrühn (2003b:34).Learners walked around the school and the surroundings, and observed the soils in the dongas, school food garden, playground and river (see Figures 4.7, 4.8, 4.9 and 4.10). Back in the classroom, on a worksheet (Appendix 12), they noted the different types of soil, the place where they came from and then drew each sample.



Figure 4.7 Soil investigations in dongas



Figure 4.8 Soil investigation in the garden



Figure 4.9 Soil investigation in school yard Figure 4.10 Soil investigation in the river

- *Preliminary Analysis*

Table 4.6 Analysis of Learners' soil samples worksheets

Learners	Soil type & place	Soil type & place	Soil type & place	Successful matches
BL1	Garden soil from garden	Clay soil from dongas	Sand soil from river	3/3
BL2	Clay soil from dongas	Garden soil from garden	Gravel soil from road	2/3
BL3	Garden soil from school	Gravel soil from dongas	Sand soil from river	2/3
BL4	Clay soil from dongas	Sand soil from river	Garden soil from garden	2/3
BL5	Garden soil from forest	Garden soil from garden	Gravel soil from school	1/3
BL6	Sand soil from river	Clay – no place mentioned	Garden soil from garden	2/3
BL7	Sand soil from river	Garden soil from garden	Clay soil from dongas	2/3
BL8	Garden soil from garden	Garden soil from garden	Clay soil from dongas	2/3
BL9	Sand soil from river	Garden soil from garden	Clay soil from dongas	2/3
BL10	Absent	Absent	Absent	Absent

Table 4.6 shows that some learners experienced problems in accurately reporting what soil types they had seen and where. For example BL6 did not tell where he saw clay soil in his drawing. BL5's response also indicated that he saw garden soil in the forest whilst we never went to the forest. It seems that this learner was thinking about what had been discussed previously in Activity 1. This I took as the inability of the learner to use what was learnt in the previous lesson in a different context. This problem could be the result

of not allowing the learners to record their observations on the site where they had collected the samples so that they returned to thinking in the abstract when they were no longer in the real situation. Moreover, I have realised that to expect Grade 2 learners to report their observations at a later stage was inappropriate.

On analysis, my critical friend has since explained that one cannot assume that garden soil is good soil and that 'garden soil' is not a soil type per se. She mentioned that it was important to support the learners to identify the type of soil found in the school garden: that is clay, sand or loamy soil (I. Schudel, personal communication, November 12, 2005). Because of the above critique, from here on, when learners refer to 'garden soil', I will interpret it as their word for 'loamy soil' as this is how their understanding was developed through the activities for this research.

In this activity I feel that the expected Life Orientation LO1: AS2 was not achieved because the goal was to assess whether the learners could report their observation of soils in writing. The activity may have been better linked to the Languages – First additional Language Learning Area LO4: AS1 integrated with Geography LO1: AS2 as recommended in activity 1 (see Table 1.1).

The skills of enquiry developed in this activity are evident in figures 4.7, 4.8, 4.9 and 4.10, which illustrate learners investigating different type of soils in the vicinity of the school. The learners helped in the process of investigating soils by showing me these places, as they know them better. They also investigated the relationship between place and soil type in their immediate context. Investigation skills indicate a potential curriculum link for future lesson plans with Natural Sciences LO1: AS2. The activity itself was aimed at developing scientific knowledge and environmental awareness but at this stage not at solving any problem. A missed learning opportunity that my critical friend (I. Schudel, personal communication, November 12, 2005) had also identified was not having explored with my learners places in the garden that could have been too clayey or too sandy and not suitable for planting. That could have been followed with a soil enriching activity linking it with the Grade 1 lesson when they prepared soil before planting to increase the loam content of the soil (see section 4.3.2.5). This leads to an observation about how useful and important it is to plan garden activities across the grades with a focus on different aspects of the garden in different grades.

On the same worksheet learners identified which soil type they thought was the best and gave reasons for the response. Learners' responses are tabulated in Table 4.7 below.

Table 4.7 Learners' identification of best soils

Learners	Best soil	Reason	What does it look like?	How does it feel?
BL1	Sandy	Plaster homes	Brown	Soft
BL2	Garden soil	Plant vegetable	Brown	Rough
BL3	Sandy	Plaster homes	Brown	Soft
BL4	Garden soil	Plant vegetable	Brown	Rough
BL5	Sandy	Plaster homes	–	Soft
BL6	Sandy	Plaster homes	–	Soft
BL7	Sandy	Plaster homes	–	Soft
BL8	Garden soil	Plant spinach	–	Rough
BL9	Garden soil	Plant spinach	–	Rough
BL10	Absent	Absent	Absent	Absent

Table 4.7 shows that out of nine learners five identified sandy soil as the best soil because it is used to plaster their homes. Four learners identified loamy soil, which was found in the garden (identified in Table 4.7 as garden soil) as best because it is used to plant vegetables. I was surprised to find five out of nine learners describing 'sandy soil' as the best soil. I assumed that the learners would see 'loamy soil' as the best soil from the point of view of suitability for planting vegetables, especially considering previous lessons linking vegetables to personal health. In this case learners used their prior knowledge to describe the soil. I did not try to change learners' perception of sand as the best soil as I had not clarified for learners the context in which they should decide on the best soil. Despite the unexpected conclusions drawn by the learners, their ability to choose and argue for the best soils is evidence that learners can make informed choices as required by Life Orientation LO1: AS2.

4.5.2.3 Activity 3: Soil test

- *Activity description*

In groups, the learners did a soil test (see Figures 4.11 and 4.12). Different soils were tested to see their capacity for absorbing and retaining water. For example, sand absorbs water well but is but poor in retaining water as it has very loose soil particles and loam

absorbs well and retains for a long time. The learners were given a worksheet to record findings for the soil test. I helped them to complete this worksheet by walking around the groups. Their findings are recorded in Table 4.8.

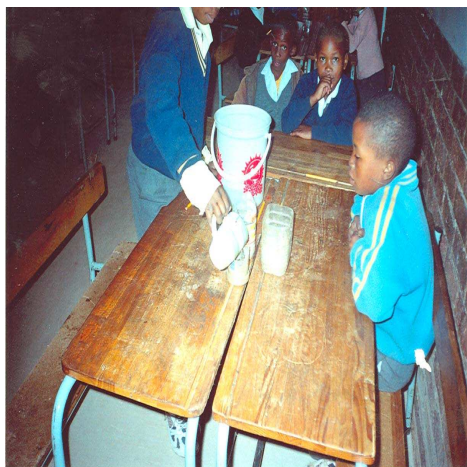


Figure 4.11 Group A doing soil test Figure 4.12 Group B doing soil test

Table 4.8 Records of soils tested in class

Group name	Soil sample	Poor in retention	Good in retention	Loose particles	Closely packed particles	Average particles
Group A	Loam		×			×
	Sand	×		×		
	Clay		×		×	
	Gravel	×		×		
Group B	Loam		×			×
	Sand	×		×		
	Clay		×		×	
	Gravel	×				

The results were discussed and evaluated again in class the next day. The learners individually completed a second worksheet on soil tested. The instruction on the worksheet was to investigate the process of filtration using loam soil (see Appendix 13).

- *Preliminary analysis*

Table 4.8 shows how the groups managed to observe the retention of water by different soils. The records on Table 4.8 show correct responses in the worksheets of both groups. This was due to the fact that I was helping them to record their findings as I was concerned about the language of the material used in the activity.

On discussion with my critical friend (I. Schudel, personal communication, November 14, 2005) I found that the recordings on the second (individual) worksheet were all wrong, because I had helped them to complete this worksheet, but I did not follow the instructions in the worksheet. I should have used a clear bottle filled half with loam soil and half with water and shaken the bottle so that together with the learners we could see which soil particles (the bigger or smaller) sank first. Instead, I used open and opaque containers as shown in Figures 4.11 and 4.12, which could not be shaken and which we could not observe as a cross-section as required in the experiment. This reflected my lack of scientific knowledge and lack of exposure to scientific investigations throughout my learning and teaching experience. Thus I experienced difficulty in doing new experiments as an educator, and noted a need for the development of cross-curricular skills for teachers engaging in environmental learning.

Natural Sciences LO1: AS2 and AS3 could have provided another integration opportunity for this activity (see Table 1.1). If I had done the experiment properly, the learners could have developed the skills to explain what was being done and to communicate their understandings of what they saw.

4.5.2.4 Activity 4: The importance of soil

- *Activity description*

I read information about the importance of soil to the learners from Saadien-Raad and Siegrühn, (2003a:42) (Appendix 14). We discussed pictures from this resource, which illustrate how soil is important for all life. After this, the learners were tasked to complete an exercise from Saadien-Raad and Siegrühn (2003b:33) in which they were required to write five sentences to explain why healthy soil is important, and to draw and label

pictures of creatures that regard soil as a home. The drawings they were expected to produce in the worksheet were expected to come from their imaginations or their prior knowledge. I decided not to assess the sentences in the activity because I wrote the sentences on the chalkboard for them to copy during our discussion.

Some learners experienced difficulty in drawing the creatures. There were no labels to the drawings so that I did not know the names of the creatures that had been drawn (Appendix 15). Some of the creatures such as the 'meerkat' that they were to draw were unfamiliar to me and I was not sure how many animals on the worksheet the learners had seen in pictures and in real life. For that reason I gave them homework. As homework they drew pictures (Appendix 16a) to show the importance of soil, and gave a description describing their pictures (Appendix 16b).

- *Preliminary analysis*

The implementation of the lesson showed gaps in the lesson plan. I found that the discussion about the importance of soil could have been followed by activities for studying insects. Prior to this they could have done an enquiry to see how many different insects live in different types of soil. The learners could have learnt why insects like to stay particularly in the loamy soil and not in other soils and how they become harmful and helpful to the plants. Furthermore learners could have understood insects that live on top of the soil and those that live under the soil. Learners' drawings of insects and animals were not linked to the authentic setting, that is, the garden (Appendix 16). Activities in an insect theme might have helped learners to do their drawings better. I could have maybe replaced this activity with a drawing of real animals informed by a collection of insects from different soils as described above.

For the second set of drawings, which was the homework, I used Table 4.9 to analyse the learners' work.

Table 4.9 Responses to show the importance of soil

The importance of soil: learner's explanations	Learners
Build houses	BL1; BL2; BL3; BL6; BL9; BL10
Insects live on soil	BL1; BL2; BL3; BL7
Plant on soil	BL1; BL5; BL6; BL7; BL4; BL9
Walk on soil	BL2
Grass grow on soil	BL2; BL3; BL10; BL4
Water is under the soil	BL10
Cars go on soil	BL3
Plants grow on soil	BL3; BL5; BL6; BL7; BL9; BL10; BL4
Animals live on soil	BL4

The discussion we had about the importance of soil in the classroom gave learners more ideas for their drawings, which they did as homework. Reading from Table 4.9, learners were able to assimilate information from the classroom discussion and some took it further by adding their own everyday experience. For example learner BL10 wrote about water that is under the soil. This reasoning was derived from a misleading class discussion whereby we said it is necessary to have soil so that we do not end up walking on water. We discussed that as we dig downwards it becomes wet because there is water underneath soil. I also related this wrong information to the same predicament mentioned above, that of being a non-scientist and not having in-depth knowledge of soil and its relation with water. My critical friend suggested that I should have told the learners that to be more accurate water runs within soil rather than under the soil although in some places where you dig down you will find water (I. Schudel, personal communication, November 14, 2005). BL3 wrote about cars going on soil. LO1: AS2 of Life Orientation (see Table 1.1) was partly met in this activity as the activity showed that learners were just describing how soil is important to the lives of the people and the entire environment. The learners did not explain what steps could be taken to ensure that soil is kept healthy. Had they done so then the requirement for LO1: AS2 would have been met.

4.5.2.5 Activity 5: Understanding soil erosion

- *Activity description*

I read information about healthy soil from (Saadien-Raad & Siegrühn, 2003a:43) to the learners (Appendix 17). We discussed how plant roots hold the soil and what would happen to the soil if there were no trees, grass and food gardens at our school. I introduced the new concept 'soil erosion' that is sometimes caused by natural processes and sometimes by human interactions with nature. On this same page there were pictures that showed the natural processes that cause soil erosion, that is, wind, rain, drought and veld fires (Appendix 17).

We discussed the pictures from (Saadien-Raad & Siegrühn, 2003a:44) that showed how people caused soil erosion and how the problem could be addressed (Appendix 18). After the discussion I gave each learner a blank sheet of paper to draw pictures that showed cared for and neglected soil. In their groups they pasted their drawings on the charts provided to design posters so as to relay a message that neglected soil is not good for our living. Table 4.10 was used to assess the posters. Faces were used for assessment in accordance with the NCS (R-9) rating scale.

Table 4.10 Assessment of Groups' drawings about well cared for and uncared for soil

Group name	Attractiveness of the poster		Message conveyed by posters	
	Cared for soil	Neglected soil	Cared for soil	Neglected soil
Group A	☺	☺	☺	☺
Group B	☹	☺	☹	☺

- *Preliminary analysis*

The analysis of this activity revealed that Life Orientation LO1: AS2 has not been achieved because learners through their drawings only show that when soil is neglected it would result in soil erosion. On the other hand when soil is well cared there are no chances of soil erosion. They were not expected to make any suggestions and investigations based on taking action for a healthier home or school environment (as

required by AS2) about for example what to do in order to care for soil in order for us to live better. The activities could have been better linked to a Geography LO2: AS3 (see Table 1.1). This LO and the AS could have been explored further through taking learners to their immediate environment, identifying places affected by soil erosion, and predicting the causes of the erosion. In this way they could have explored real effects of human or natural causes on soil health rather than being limited to information from pictures in their books.

4.6 Emerging Issues

From the three research cycles the issues described in the preliminary analyses are synthesised below for further discussion in the next chapter.

4.6.1 Broad curriculum links

In all the cycles there was evidence that utilising the NCS (R-9) Principles and Learning Area statements could link the garden and the curriculum. The possibilities for learning are explored through achieving the Learning Outcomes and the Assessment Standards in different Learning Areas as articulated in focus group interviews (see section 4.2.2.4). Thus, the examples given in this section influenced the choice of topics for Cycles 2 and 3 (see sections 4.3.1 and 4.4.1).

4.6.2 Gardens as extra – curricular activity

The garden is sometimes seen as an extra–curricular activity that educators felt could be a means to get incentives (see section 4.2.2.3) although it supports teaching and learning. The group participants raised concerns about how realistic educators' expectations for financial reward for garden work might be and how one can convince them of another incentive.

4.6.3 Gardens as means to eradicate poverty

The focus group discussions noted how the gardens could address the issues of poverty in schools (see section 4.2.2.1). Teachers reported that children come to school not having

eaten anything and that influenced the establishment of school food gardens in their communities. The gardens were also reported to have been responding to many issues associated with poverty such as health and diseases like HIV/AIDS.

4.6.4 Community links

There were missed learning opportunities in the last two action research cycles. For example it was a pity that I did not consider possible community links in Cycles 2 and 3, as these were mentioned by focus group participants as playing a role in the garden. It would have been a good thing to develop activities in my lesson plans that would have fostered cooperation between school, community and across other departments (see sections 4.2.2.2 and 4.2.2.5).

4.6.5 Further themes

In Cycle 2, Activity 2, I considered how the lesson might have been taken further in the future with a discussion on plants, water and sustainability (see section 4.4.2.3). The implementation of the lesson showed gaps in the lesson plan as I found that the discussion about the importance of soil in activity 4, section 4.5.2.4 could have been followed by activities for studying insects, for example.

4.6.6 Learning in context

Section 4.4.2.5.2 showed some gaps in the planning of the activities as Activity 5 could have been taken as the planning activity for planting in the garden. There was also a loss of connection between the real and the abstract as seen from the colours used in the drawings for the vegetables by some learners. There were also gaps between the lessons planned for Grade 1 and Grade 2 which could have been linked to study the type of soil in the garden as the Grade 1s had lessons on soil preparation. We could have explored with my learners places in the garden that could have been too clayey or too sandy and not suitable for planting. A problem was identified when the learners encountered a problem in recording their observations after having left the site where they had collected the samples so that they returned to thinking in the abstract when they were no longer in the real situation (see section 4.5.2.2).

4.6.7 Learning Area selection

Life Orientation as the backbone of the Life Skills Learning Programme in the Foundation Phase was not the best Learning Area to respond to a variety of environmental issues as it is too prescriptive in the lower grades and thus limits the themes or topics to those prescribed. For example, the issue of personal hygiene in LO1: AS2 of the Life Orientation was not particularly relevant in my planned garden activities. Most Cycle 3 activities led to broader speculation of school food garden opportunities in other LOs and ASs within Life Orientation as well as within other Learning Areas. The integration within and across Learning Areas was shown in my lesson plans but not considered during implementation of activities, hence there was a problem in order to achieve the goals of some of the activities planned.

4.6.8 Teaching methods and materials

The use of pictures had unexpected results in some activities as some learners gave unexpected interpretations. In other activities better results were achieved. In Cycle 2 Activity 1 the use of pictures was very helpful, whilst in Cycle 3 Activity 1 the use of pictures caused confusion amongst learners.

4.6.9 Teacher skills

A need for the teacher to have multiple skills from different learning areas in the teaching of Environmental Education was evident in the second and third cycles. I have noted in section 4.4.2.1 that if I had a deeper understanding of ecology I could have provided opportunities for learners to learn about sustainability in more depth. I also struggled to do scientific experiments as explained in section 4.5.2.3, Cycle 3.

4.6.10 Assessment systems

Tables 4.5 and 4.10 showed some of the complexities of the OBE assessment system. The faces used raises questions as to who the kind of assessment helps, the educator concerned, learners or the Department of Education? I found however that careful

analysis of learners' work provides very useful insight into both the teaching and learning process, and I was able to gain much from carefully assessing learners work.

4.7 CONCLUSION

In this chapter I shared information from the Cycle 1 'focus group interviews' which informed my lesson planning for Cycle 2 and Cycle 3. Notable from this study was that learning does not have an end, as I found myself playing the role of a co-learner and mediator in the process. For example, I came to new understandings of the current curriculum policy NCS (R-9) and explored the use of the school food garden for curriculum work. The issues raised by my critical friend during the analysis of my work also provided evidence of my role as a researcher and a learner in the process. The synthesis of the emerging issues is further developed and discussed in Chapter 5 through a set of analytical statements.

CHAPTER 5

SCHOOL FOOD GARDENS, ENVIRONMENTAL ACTIVE LEARNING AND LESSON PLANNING IN THE FOUNDATION PHASE LIFE SKILLS LEARNING PROGRAMME

5.1. INTRODUCTION

This chapter illuminates and discusses issues that emerged during the analysis stage of the data generated for this study. It provides a rich understanding of the data presented in Chapter 4 and further discusses and makes meaning of the data by drawing from the literature reviewed in Chapter 2. It also explores how the data contributed to answering the question and goals of this research. In addition, I report on how action research as the methodology chosen for this study has been significant for informing classroom-based research and reflexive practice. It further elucidates how the analysis of the NCS policy and OBE material have helped me to understand lesson planning and implementation of activities based on environmental learning in the Foundation Phase Life Skills Learning Programme.

For this chapter to present a clear and meaningful discussion of the issues emerging from the study, it is presented in the form of analytical statements as discussed by Bassey (1999) (see section 3.5). The analytical statements are as follows:

- Analytical statement 1: Focus group discussions with other teachers helped to define the focus for lesson planning using the school food garden.
- Analytical statement 2: Using active learning approaches, the school food garden and immediate environment as the context for lesson planning in the Life Skills Learning Programme opened up space for environmental learning.
- Analytical statement 3: The Life Skills Learning Programme with Life Orientation as its backbone has both enabled and limited environmental learning.
- Analytical statement 4: Community links and valuing of school food gardens could have been strengthened through the Life Skills Learning Programme.

- Analytical statement 5: Action research allowed for a reciprocal relationship to emerge between teaching and assessment practice and my own reflexive curriculum development competence.

5.2 ANALYTICAL STATEMENT 1: Focus group discussions with other educators helped to define the focus for lesson planning using the school food garden.

5.2.1. Teacher collaboration in planning

In this section, I draw on the literature and discuss the data described in Cycle 1 section 4.2.1. Cycle 1 was designed to be a scoping activity to explore educators' perceptions about the links between the school food gardens and the curriculum. I draw on the data through highlighting the importance of recognising teacher collaboration for an individual like me found to be faced with challenges of being a researcher of her own practice. The information from the teachers helped me to plan lessons that would be trialled in the context of my school, Lungelolethu, and to reflect on my own practice.

On the day of the focus group interviews we explored the links between the school food gardens and the curriculum. The process of working together was viewed by some of the educators as of great help even for them and they wanted to know if we could continue as a cluster group to plan lessons that would incorporate the school food garden into the curriculum work (see section 4.2.1). This adds to the meaning I gave to focus group discussion for this particular study in section 3.4.1, that they are conducted with the aim of creating a collegial atmosphere for the interviewees to become collaborators in understanding gardening in the curriculum. I viewed myself in this process as a newcomer in a 'community of practice' (Lave & Wenger, 1991) as I learnt things that were of great help for planning lessons for the next cycles. As argued by Lave and Wenger, in a community of practice learners acquire knowledge through collaborative social interaction and the social construction of knowledge. Rogoff referred to such collaboration and understanding between parties involved as 'intersubjectivity' (section 2.5.2).

5.2.2. School food gardens perceived as extra-curricular

According to the information gathered from the focus group interviews, the gardens were regarded as extra-curricular work that the educators were faced with in their schools. The educators felt that the gardens were adding to the work load in their classrooms, although they could see its value in making their teaching and learning easier without being confined to the classroom. The opinions may relate to the South African history of teachers using the teaching of gardening as a tool to resist apartheid education (see section 3.2.1). Apartheid education perpetuated gender stereotyping and subjugated Blacks under the ruling White race. For that reason the gardens were used as a place of punishment for misbehaviour in schools. As described in section 3.2.1, the use of the garden as a place of punishment may well have aggravated the perception that there were in fact little or no learning possibilities in gardening and added to the list of negative associations with it.

In response to the portrayal of school food gardens as extra-curricular, it was also argued that the garden could play a vital role in developing educators' professionalism through achieving IQMS requirements (see section 4.2.2.3). For example in the South African document for the training of educators, the IQMS is defined as a system that consists of three programmes, which are aimed at enhancing and monitoring performance of the education system. These programmes are as follows:

- Developmental Appraisal,
- Performance Measurement, and
- Whole School Evaluation.

(South Africa, DoE, n.d)

This means that for educators to achieve the IQMS requirements, they need to understand the purpose of the three programmes listed above. As defined in the IQMS document the Developmental Appraisal system is aimed at providing programmes for the development of educators in a transparent manner since the areas of strength and weakness would have been identified. Using the school food garden for this kind of professional development would help educators to develop lesson plans that would take into consideration contextual factors affecting their teaching and learning such as the issues of poverty. In section 2.2 I have discussed my assumptions and beliefs on the role of the school gardens

in addressing some of the poverty traps that have disrupted the life of African families especially in rural communities.

Moreover the quality of teaching and learning is an important dimension of Whole School Evaluation hence the school food garden could contribute to better quality teaching and learning (South Africa, DoE, n.d). Therefore the value of using the school food garden for Whole School Evaluation should demonstrate applied competences in their teaching and learning practices, as demonstrated in Cycles 2 and 3 in the context of my own practice.

The discussion on the IQMS issue helped me also to understand that in my lesson planning, I need to show how the school food garden could be used for improved teaching and learning processes rather than as a financial reward. It is stated for example in section 2.3.2 that the 4-H Programme to which these educators belong was introduced to schools not only to alleviate poverty but also to develop and transform the curriculum. Therefore school food gardens can form part of the formal curriculum rather than being extra-curricular, as shown in Cycles 2 and 3.

5.2.3. Focus groups influencing the choice of lesson topics in the garden

I have indicated above that I worked together with educators exploring opportunities the school food gardens could provide for curriculum development. This helped to raise some ideas on lesson topics with a focus on the right of all things in nature to live, and understanding of ecosystem processes. For Cycles 2 and 3, therefore, I planned lessons that were focused on developing respect for living and non-living things in the environment (see section 4.3.1). The groups elaborated on the issue by mentioning the need for a healthy environment and how this can be done through recycling (see section 4.2.2.1). For example, from the focus group interviews reported in section 4.2.2.4, I got ideas for developing mathematical concepts such as measuring of plots and the designing of shapes in the garden. Those ideas were useful for Cycle 2 as the learners designed shapes in Activity 5 for their plots. For Cycle 3 the idea of studying soil types was also amongst those suggested by the teachers. In Activities 1 and 2 in Cycle 3 the learners were engaged in studying soil types in pictures and from the immediate environment (the school garden and the surroundings).

5.3 ANALYTICAL STATEMENT 2: Using active learning approaches, the school food garden and immediate environment as the context for lesson planning in the Life Skills Learning Programme opened up space for environmental learning.

5.3.1. Recognition of prior knowledge as central to active learning

In the following sections I discuss evidence of learning reported in Chapter 4, Cycles 2 and 3. These sections show how active learning, situated learning and curriculum as a contextualised social process (see sections 2.5.1 and 2.5.3) complement each other. In Activity 2 of Cycle 2, learners explored environmental issues in pictures in order to establish a foundation for exploring issues in their context. They learnt about good and bad things that people do in nature which affects peoples' lives. The learners' prior knowledge and critical thinking in this activity was challenged. This was evident in the analysis stage as I looked at the justification of their responses. The response given for the reasons for picking flowers, vandalising trees and playing with water (see section 4.4.2.3.2) were interesting. Their responses challenged me to understand and accommodate learners' perceptions and views on the subject matter. As put in the DoE Educator's Manual:

Learners' points of view are windows into their reasoning. Awareness of learners' points of view helps educators challenge learners, making school experience both contextual and meaningful.

(South Africa, DoE, 2000:19)

As they participated in the activity they drew from their knowledge of having been exposed to such issues in their context, hence they were able to perform the task. Their prior knowledge helped them to perform the task based on understanding environmental issues even through using pictures and gave them a good foundation for proposing actions at a later stage. They suggested in Activity 3 of Cycle 2 the action to be taken to address some of the issues that they felt they would enjoy doing for nature.

The fundamentals of active learning, one of which is recognition of prior knowledge, were also prevalent in Activity 1 of Cycle 3. The data as analysed in section 4.5.2.1 showed that the learners had knowledge of soil types that they brought to their classroom interpretations of pictures. They associated these with soils from their environment and

their experiences of having been exposed to other contexts such as areas on the coast. For example, they told me that the colour of the sand from the sea is yellow whilst there is no sea in their environment. Their active involvement showed the importance of taking the context of learners into consideration when planning lessons. The discussion on situated learning referencing Lave and Wenger (1991) in section 2.5.1 highlighted situated learning and legitimate peripheral participation as requiring an understanding of knowledge and learning in context.

5.3.2 Learning in context

This section articulates some critiques based on the planning and implementation processes of the lessons planned for Cycle 2 and 3. I realised during analysis that Activity 6 in Cycle 2 (see section 4.4.2.6) could have been a planning stage for planting in the garden. I expected learners to draw the garden beds with different vegetables planted in them. My assessment as recorded in Table 4.4 section 4.4.2.6 showed that not all learners were able to draw realistic looking vegetables and give the correct colour. This reflected their lack of knowledge of a variety of vegetables. As the mediator of learning I could have provided opportunities for them to explore the vegetables first whether through concrete items or in pictures. Expanded opportunities for learning could also have been to actualise planning. In that way they would have also been engaged in decision-making since they would have planted things of their own interest. The discussion could have also been taken further for learners to explore correct seasons for planting different vegetables as was discussed in focus groups in section 4.2.2.4.

In Cycle 3, Activity 2, the learners were engaged in investigation in their immediate context – the garden and the surroundings (see section 4.5.2.2). On analysis I noted that there was a loss of connection between the real and the abstract when the learners recorded their soil observations after they had left the sites where they collected their samples. The observations could have also been extended to understanding more about the types of soil in the garden, which could have led to the understanding of whether our garden had soil suitable for planting. In NEEP-GET (2004b:28) it is stated that “The emphasis on investigations in the curriculum provides learners with many opportunities to explore the diverse and contextual nature of environmental issue and risks ... and often unique solutions are needed in different contexts”. This means that having explored the

soils in the garden the learners could have developed a strategy for keeping the soil healthy and suitable for planting. In this way, I could have supported progression between the Grade 1 activity 5 of preparing soil and the Grade 2 activity on soil investigation.

Thus for meaningful active learning it is important to consider that learning should be relevant to the learner's context and level of understanding. The school food garden in this case was relevant to the learners since it was in their context. But as mentioned in section 1.2 the Foundation Phase learners were not involved in the 4-H Programme activities including the garden, hence learners showed little knowledge about the colours of vegetables. As described in section 2.5.1 school grounds (in particular the school food garden) are a resource and a potential place for learning (Malone & Tranter, 2003).

5.4 ANALYTICAL STATEMENT 3: The Life Skills Learning Programme with Life Orientation as its backbone has both enabled and limited environmental learning.

5.4.1 Broad curriculum links

In section 2.6 I briefly discussed how I attempted to link the NCS (R-9) Principle 1 to Learning Outcome 1 of the Life Orientation Learning Area (see Table 1.1). These attempts are evident in sections 4.4 and 4.5 through the lesson activities I planned for this research. These activities demonstrated a need for learners to understand the interdependence between humans and non-humans for healthy ecosystems (healthy environment), as lesson topic for Cycles 2 and 3 refers to caring for nature and the richness of soil which supports a need for humans to become responsible and respectful for processes of creating healthy environments. Nevertheless a healthy environment also refers to the rights of humans to healthy food which through the garden activities could have been taken further through a focus on healthy soil into planting activities (see sections 4.4.2.5 and 4.4.2.6). The activities also showed evidence of how learners together irrespective of gender, age and cultural backgrounds (issues of poverty) have rights to education. For example, in section 4.4.2.1 I reported how I struggled with the story activity but because I considered the aspect of inclusivity in my teaching and learning processes I made use of the older learners to achieve my goals.

5.4.2 Learning Area selection

I found during the analysis of the data that some activities performed in Cycles 2 and 3 enabled environmental learning using LO1: AS2 of Life Orientation. For example, the story narrated and discussed in activity 1 of Cycle 2 (see section 4.4.2.1) helped learners understand how ecosystems work and the values underpinning sustainability. As described in section 2.3.2, learners had to think about how to use resources in a sustainable manner to meet their present needs and in that way allow future generations also to meet their needs.

On the other hand limiting environmental learning to the Life Orientation Learning Outcomes in the Life Skills Learning Programme can mean missing further learning opportunities. This results from a narrow interpretation of Learning Outcomes in lesson planning and implementation. This was evident in most of the activities as LO1: AS2 of Life Orientation could have been achieved better through meaningful integration with LOs and ASs within other Learning Areas. Flexibility and integration could have complemented and extended planning and implementation of lesson activities focused in Life Orientation LO1: AS2 as recommended by NEEP-GET (2004c) which emphasises meaningful integration in the Life Skills learning programme. In section 4.4.2.2 for example it is discussed how Activity 2 developed the skill of enquiry in the learners and how that could link better with Natural Sciences LO1: AS2 instead of Life Orientation LO1: AS2. The activity could have linked to personal community and environmental health if I had asked learners to look at the health of the soil and related that to the soil's ability to provide food for the health of the individual and the community. Had I brought in these issues of personal, community and environmental health when looking at the soil, I could have met the requirements of LO1 through addressing health promotion more broadly. This shows that Assessment Standards should be interpreted in relation to the Learning Outcome.

I discovered in Cycles 2 and 3 that in the process of implementing some of the activities, possibilities for environmentally focused themes emerged. On analysis of Cycle 2 (see section 4.4.2.3) learners' responses revealed a need for further exploration of environmental issues in their context. Expanding the lesson plan beyond Life Orientation

could have opened up discussion on the right time to pick flowers, how flowers reproduce through seeds, and how it is alright to pick small samples of plants in order to propagate them vegetatively (see section 4.4.2.3).

In Cycle 3 section 4.5.2.4 the discussion on the importance of soil could have been a platform to study insects. It is stated that learners could have studied insects' lives and how they may be harmful or helpful to plants. I found LO1 quite individualistic in that it is focused largely on personal development but I could have had a parallel Literacy Learning Programme integrated with Natural Sciences in which I could have supported learners to use insects as a theme around which to develop language skills.

The discussion above provides insight into how the curriculum can be constructed and reconstructed in situated practice (Cornbleth, 1990).

5.5 ANALYTICAL STATEMENT 4: Community links and valuing of school food gardens could have been strengthened through the Life Skills Learning Programme.

5.5.1 Community links

There were places where I could have expanded learning opportunities in the last two cycles. For example, I could have involved the community in the garden. It would have been a good idea to develop activities in my lesson plans that would have fostered cooperation between school, community and across other government departments (see sections 4.2.2.2 and 4.2.2.5). It was stated in the focus group interviews that the unemployed youth from the community could be encouraged to work in the garden in order to earn money.

Good relationships between the school and the community were manifested through the establishment of the 4-H Programme in schools as mentioned above. In section 1.2, I reported on how the goals of the 4-H Programme were to be achieved through collaboration between parents, teachers, agricultural extension officers and the youth. I also found it significant to look at the issue of poverty as an issue that I had not addressed in my lesson plans although it was mentioned in the focus group interviews (see section 4.2.2.1) and is also one of the 4-H Programme goals. The ideas raised on poverty in the

focus group could have been linked to the discussion in section 2.2 where I was reporting on the levels of poverty in South Africa and how I thought the school food gardens could play a role in addressing the issue. In section 2.4.2, I comment on how community school gardens in the USA were found to create a space for community school relationships whereby the child's individuality is repeatedly cultured in the social context. In that way academic subjects are connected with the learners' own experiences. Lessons from the history of the UK (reported in section 2.4.1) also could have strengthened the Life Skills Learning Programme. For example if my lesson plans had considered school community relationships, I could have supported greater nutritional awareness and consequential positive changes in eating habits for students, their families and communities at large.

5.6 ANALYTICAL STATEMENT 5: Action research allowed for a reciprocal relationship to emerge between teaching and assessment practice and my own reflexive curriculum development competence.

5.6.1 Considering language in learning

In Cycles 2 and 3 I created a learning environment to address the issue of language in teaching and learning. In Cycle 2 Activity 1, I translated the story of the Marula Tree from English to isiXhosa which is the language of my learners. In Cycle 3 Activity 1, I allowed my learners to use isiXhosa to describe the soils and I translated the words into English so that learners could actively participate in learning.

5.6.1 What do I understand about assessment?

Tables 4.5 in sections 4.5.2.1 illustrated a complex bureaucracy in the assessment system that I am using. This raises questions regarding who this assessment practice helps: the educator concerned, learners or the Department of Education as shown in my lessons in Cycles 2 and 3. Assessment is not something that you should think about at the end of a unit of work, it must form an integral part of your planning and preparation for effective teaching and learning in your grade, especially as progression is based entirely on continuous assessment in the Foundation Phase (South Africa, DoE, 2005).

Assessment, as shown in Cycles 2 and 3, can be approached in a formative and continuous way so as to inform both the teacher and the learner for improved teaching and learning and what kind of lessons to plan in future. Formative assessment is the type of assessment that I used. I found that it has great potential to form and shape teaching and learning. It involves a developmental approach that supports the learning process. It is a continuous process that uses constructive feedback to help learners grow (South Africa, DoE, 2005). It is stated from the document for teacher's INSET Programme that "as teachers we need to be creative, considerate and skilled in helping learners to develop their full potential" (South Africa, DoE, n.d). The examples of assessment processes reported in Cycles 2 and 3 show that formative assessment activities can be made up of careful assessments of a diverse range of learners' work.

5.6.1 What did I learn from assessment and the associated research process?

Activity 1 Table 4.5 in Cycle 3 of my research is a typical example of assessment where a rating scale was applied. The rating scale in this case was in the form of symbols such as faces. I used three faces ☺ ☹ ☺ (smiley face, straight face and sad face) to assess learners work for activity 5. Firstly I allocated marks to the learner's responses and converted the marks into symbols. On analysis of this activity I realised how the research process helped to understand how assessment should be done according to the Department of Education's requirements. According to the Department of Education the faces are used for the Foundation Phase for assessment purposes but are supposed to be interpreted along the lines of the national code. It is recommended that teachers use the national code system, for example:

- 4 – has exceeded the requirements
- 3 – has satisfied the requirements
- 2 – has partially satisfied the requirements
- 1 – has not satisfied the requirements

This means that four faces instead of three ought to be used for assessment. As shown in Cycle 2, Table 4.5 however, using symbols such as these does not necessarily ensure accurate assessments, as I found that reflections in my journal provided further details on learning processes that helped me to address emerging issues in the lesson.

The research process helped me to reflect on my assessment practices. As stated in the Norms and Standards for Educators policy, a good assessor is one who can reflect on the appropriateness of assessment decisions made in particular learning situations and adjusting the assessment task and approaches where necessary (South Africa DoE, 2003b). The reflective process in the action research cycles helped me to achieve this, as shown in Cycles 2 and 3.

5.6.2. Teacher skills

A need for the teacher to have multiple skills from different learning areas in the teaching of Environmental Education was evident in the third cycle. I struggled to do scientific experiments as explained in section 4.5.2.3 Cycle 3, where different soils were tested for their capacity to absorb water. Through my research I have developed my reflexive competence which according to the (South Africa DoE, 2003b) is evident in educators when they are able to make educational judgements on educational issues arising from real practice or from authentic case study exercises.

5.6.3. Teaching methods

The use of pictures had unexpected results in some activities as some learners gave unexpected interpretations. In other activities better results were achieved. In Cycle 2 Activity 1 the use of pictures was very helpful whilst in Cycle 3 Activity 1, the use of pictures caused confusion amongst learners. I indicated in section 4.4.2.1 that pictures were used for visual reinforcement and that helped the learners to understand the story better which was useful because of the story's length. In this activity I showed competence practically as a learning area specialist by being able to select methodologies appropriate to learners and contexts (South Africa DoE, 2003b). It is further stated in South Africa, DoE (2003b) that classroom lesson planning includes teachers deciding how they will approach their teaching and what methods they will use.

5.7 CONCLUSION

This chapter has provided me with the opportunity to reflect more holistically and deeply on the study as a whole and what I have been able to learn through the study. The key

insights were captured and reported according to a set of analytical statements, and each was discussed in some detail, drawing on insights from the data reported in Chapter 4 and the literature presented in Chapter 2. In the next chapter I summarise the study and make recommendations and reflect on the research process.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

6.1. INTRODUCTION

This chapter provides a summary of the study, reflections on the processes undertaken to answer my research question and goals, and a synthesis of key issues that have emerged and need further consideration. It gives recommendations on how the school food garden could be a useful learning resource in developing the curriculum. My recommendations also serve to open up space for critical and constructive engagement for others who may want to conduct studies on the use of school food gardens for curriculum and educational transformation. I am also intent on challenging the 4-H Programme schools to critically look at my findings and consider revisiting their actions, especially by considering involving Foundation Phase learners in the programme activities.

6.2. SUMMARY OF THE STUDY

I have reported a case study investigating the use of school food gardens in developing the Foundation Phase curriculum with the Life Skills Learning Programme as the area of focus. The experiences and feelings I had in teaching Grade 1 and 2 learners and being involved in the 4-H Programme led me to consider researching how the Life Skills Learning Programme could set the platform for environmental learning in the early years of schooling within the NCS (R-9) curriculum.

This study had three action research cycles as reported in section 3.2.3. Cycle 1 was planned as a scoping activity for understanding how educators view school food gardens and the curriculum. In Cycle 1 semi-structured focus group interviews were conducted to allow open discussions about educators' views considering how the NCS (R-9) curriculum could relate to the context of learners. Educators provided important information on how these gardens might be useful in developing learners' skills, knowledge, values and attitudes. The discussion from the focus groups further suggested the potential for school gardens to develop educators' professionalism and support close co-operation between schools, communities and other government departments.

Responses from the focus group interviews provided useful insights and ideas that helped me plan my lessons for Cycles 2 and 3.

Cycles 2 and 3 (trial lessons) for Grades 1 and 2 respectively were planned to research the effectiveness of school food gardens in developing the curriculum through active involvement of learners and contextualising the curriculum. Unstructured reflective observations were used as data gathering tools because I was both the researcher and the mediator of learning at the same time. I also analysed the learners' work to get a richer feedback of how effective and efficient the school food garden and the immediate environment were in developing the curriculum.

In order to develop my lesson plans for Cycles 2 and 3, curriculum documents and relevant learning and teaching support materials were consulted. Initially I proposed Principle 1 of NCS (R-9) and LO1: AS2 of Life Orientation as key performance indicators for this study. In the process of researching I found that the Life Skills Learning Programme has limitations in terms of content if Life Orientation Learning Outcomes are not meaningfully integrated with outcomes from other Learning Areas in lesson planning. This resulted in looking at Life Orientation on the one hand as a limiting factor for environmental learning and on the other hand enabling other processes in environmental learning to be functional. I found that a narrow interpretation of the Life Orientation Learning Outcomes could result missing further learning opportunities that are relevant to the Life Skills Learning Programme.

I researched the concept of the garden as a place and a resource for learning through investigating how learners learned about the right of all things in nature to live and the importance of ecosystems. The Grade 1 learners responded positively to the lesson topic, which was about 'caring for nature', and the concept of place and a learning resource was developed through the activities performed. The Grade 2 learners were engaged in an investigation to study soils as the lesson topic was aimed at developing understanding about 'the richness of soil'. The data generated revealed how I, as a researcher, was exposed to learning new skills and knowledge through working in the Foundation Phase curriculum. Throughout my study I became successful in making sense of what I was doing and I was able to reflect on my strengths and weaknesses. This I have done through detaching myself, in the form of being an observer of activity, a process that I achieved

through careful analysis of the lesson process and learning outcomes produced by the learners. I have developed an in-depth understanding of interacting with the NCS (R-9) curriculum policy, how environmental education can be integrated into teaching and learning, and a better understanding of specific scientific experiments for young learners.

The processes involved in my study showed that although I was successful in answering my research question through the methods I used, there were also methodological dilemmas that could have distorted my progress if I did not find means to address them. These are discussed below:

- I needed an ‘outsider’ to help me look into what I was doing and how I was interpreting data. I have mentioned above that detachment was the strategy I applied in order to avoid bias in my study. My supervisor played an important role especially in the analytical stage of my data. She acted as my supervisor and at the same time as a critical friend, providing me with analytical skills such as positive criticisms on what occurred in the lessons, which helped me to achieve a critical vantage point on my own practice.
- The amount of time in which the study was to be conducted was inappropriate. Because it was action research, I was expected to analyse my data for each cycle before the start of the next cycle. This was impossible because of the time scheduled for the study which was to be concluded in a period of a year. I decided to do an informal analysis for each cycle which enabled me to collect and co-ordinate data which helped me to move on with my cycles of research. An in-depth analysis of all the cycles was done after they had all been implemented.

6.3 RECOMMENDATIONS

Chapter 5 provides a detailed discussion on the issues emerging from the study. These issues provide insights for the following recommendations. Through my practice, I have demonstrated that

- Educators can play a role as researchers and co-learners in the process of teaching and learning. This means that through the process of teaching and learning educators can become more self-reflexive, thus understanding a need for change

in their own practice. Self-reflexivity, for example, could enable educators to better understand opportunities that the school food gardens may provide for curriculum development instead of seeing gardens as an extra-curricular activity.

In this research I have shown a

- Working understanding of how the first principle of the NCS (R-9) can be linked to Learning Outcomes in Learning Area Statements. This helped me not only to ensure the development of learners in the subject matter but also to respond to the government's expectations concerning the holistic development of South African children. I learnt in the process of interpreting the LOs and ASs that sometimes the Life Orientation Learning Outcomes become too prescriptive and can limit environmental learning if narrowly interpreted. I identified possible integration opportunities that could have helped to achieve the expected goals of the activities planned. I also mentioned the need for considering flexibility in my lesson planning and implementation further of themes could have extended learners' knowledge understanding of issues in context. This attest to the view which says "The historically fragmented nature of knowledge can be overcome if attention is paid to relevant integration both within Learning Areas and across Learning Areas" (South Africa, DoE, 2003: 6).

As shown in this research,

- Assessment practices are integral to educators becoming reflexive practitioners. I have learnt in the process of this research that if assessment practices are well planned with clear statements of what the learners are to achieve, this can help educators identify areas of concern and how they can be dealt with. The research process also enabled me to understand departmental requirements for assessment practices for the Foundation Phase, and I learned that assessment practice requires more interpretation than simply allocating symbols or rating scales.

This study has also shown that

- Context is important in environmental learning and it can encourage school community relationships. I mentioned that learners' knowledge and experience could have been enhanced through interactions with parents and the community in general, thereby strengthening the Life Skills Learning Programme. I learnt that opportunities for learning could have been extended into educating the learners

and their families about correct eating habits that would help them overcome illnesses that are poverty related.

- There is a need for development of professional skills and knowledge in both educators and learners such as scientific skills to address all Learning Area requirements.

6.4 RECOMMENDATIONS FOR FURTHER RESEARCH

Having focused in this research particularly on my classroom and school, it would be beneficial for other schools, especially those with the 4-H Programme, to consider the findings of this research. The practical garden work that my school (and hopefully most of the schools) are doing needs to be combined with theoretical curriculum knowledge that would develop an understanding of the garden as a **place** and a **resource for learning** in both educators and learners. Akerblom (cited in Wickenberg et al., 2004) reported that learning in the garden occurs on different levels, where the challenge for the teacher is to combine practical garden work with more theoretical reflections together with the pupils, as shown in this study.

Interactive methodologies that would allow close co-operation between schools and communities would be another way to understand the role of school food gardens in curriculum development and their potential in responding to environmental issues and risks. Through sharing the findings of this study with the 4-H Programme schools I believe that we could together address communities' needs in terms of contributing to the alleviation of poverty as it is the goal of the 4-H Programme. Although the scope of this research was limited, it has opened up some practical possibilities and important ideas for using school food gardens in curriculum work within the learners' immediate context, and in the context of the NCS (R-9) requirements.

6.5 CONCLUSION

In concluding this research I would like to synthesise its main contribution as providing evidence of the potential of establishing stronger links between school food gardening, curriculum implementation and teacher growth and reflexivity. I am hopeful that the findings contained in this research project, may lead to more researchers unearthing other

methods and provide solutions aimed at alleviating poverty through seeking ways of making school food gardening more relevant to the learning that takes place in schools. In particular I hope that the insights I have gained through this study can inform further development of the 4-H Programme. As shown in this study teacher reflexivity is an important dimension of this process.

REFERENCE LIST

- Bassey, M.** (1999). *Case study research in educational settings*. Buckingham: Open University Press.
- Baumann, A. S., Bloomfield, A., & Roughton, L.** (1997). *Becoming a secondary school teacher*. London: Hodder and Stoughton.
- Carr, W., & Kemmis, S.** (1986). *Becoming critical: Education, knowledge and education research*. London and Philadelphia: The Falmer Press.
- Cohen, L., Manion, L., & Morrison, K.** (2001). *Research methods in education* (5th ed.). London: Falmer Press.
- Cornbleth, C.** (1990). *Curriculum in context*. London: Falmer Press.
- Denzin, N. K., & Lincoln, Y. S.** (2000). *Handbook of qualitative research* (2nd ed.). London: Sage Publications.
- Dillon, L., Rickinson, M., Sanders, D., Teamey, K., & Benefield, P.** (2003). *Improving the understanding of food, Farming and Land Management Amongst School-age Children: a Literature Review* (DfES Research Report 422). London: DfES. Retrieved January 25, 2006, from <http://www.dfes.gov.uk/research/data/uploadfiles/RR422b.pdf>
- Ezzy, G.** (2002). *Qualitative analysis. Practice and innovation*. London: Routledge.
- Fang, W.** (1995). *The case for more high school gardens*. Canada: City Farmer. Retrieved January 25, 2006, from <http://www.cityfamer.org/highschool77.html>
- Glaser, B., & Strauss, A.** (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine: Chicago.
- Gulting, J., Hoadley, U., & Jansen, J.** (Eds.). (2002). *Curriculum: From plans to practices reader*. New York: Oxford University Press.
- Hitchcock, G., & Hughes, D.** (1995). *Research and the teacher. A qualitative introduction to school-based research*. London & New York: Routledge

- Human Sciences Research Council.** (2005). *Emerging voices: A report on education in South African rural communities*. Cape Town: HSRC/Nelson Mandela Foundation.
- Jansen, J., & Christie, P.** (1999). *Changing curriculum: studies on outcomes based education in South Africa*. South Africa: Juta.
- Klein, S. E., & Merrit, E.** (1994). Environmental education as a model for constructivism teaching. *Journal of Environmental Education*, 25(3), 14-21.
- Kruger, N.** (1998). *Facilitating Life Skills*. Pretoria: Amabhuku Publications.
- Kruger, R. A., & Casey, M. A.** (2000). *Focus groups: a practical guide for applied research* (3rd ed.). London: Thousand Oaks.
- Lather, P.** (1986). Issues of validity in openly ideological research: Between a rock and a soft place. *Interchange*, 17(4), 63-84.
- Lave, J. & Wenger E.** (1991). *Situated learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.
- Lotz-Sisitka, H.** (2002). Curriculum patterning in environmental education: a review of developments in formal education in South Africa. In E. Janse van Rensburg (Ed.), *Environmental education, ethics & action in Southern Africa (EEASA) monograph* (pp.97-120). Pretoria: Creda Press.
- Lotz-Sisitka, H., Timmermans, I., & Ward, K.,** (2004). *Improving rural education*. In L. Le Roux. (Ed.). *Our environment, our stories*. Pretoria: UNISA.
- Malone, K., & Tranter, P.** (2003). School grounds as sites for learning: making the most of environmental opportunities. *Environmental Education Research Journal*, 9(3), 283-303.
- Maxwell, J. A.** (1992). Understanding and validity in qualitative research. *Harvard educational review*, 62(3), 279-300.
- McKernan, J.** (Ed.). (1996). *Curriculum action research: a handbook of methods and resources for the reflective practitioner*. London: Kogan Page.

- McNiff, J., Lomax, P., & Whitehead, J.** (1996). *You and your action research project*. London: Routledge.
- McTaggart, R.** (1991). *Action research: a short modern history*. Geelong, Victoria: Deakin University Press.
- Moll, I.** (2002). Clarifying constructivism in a context of curriculum change. *South African Journal of Education*, 27, 5-32.
- Ncula, N. S.** (2004a). *Contextual profile of Lungelolethu School*. Unpublished MEd (EE) assignment. Rhodes University, Education Department, Grahamstown.
- Ncula, N. S.** (2004b). *Reviewing the 4-H Programme*. Unpublished MEd (EE) assignment. Rhodes University, Education Department, Grahamstown.
- NEEP-GET.** (2004a). *Enabling an environmental focus in Foundation Phase: a policy interpretation guidebook for the Revised National Curriculum Statement for GET*. Pretoria: Government Printer.
- NEEP-GET.** (2004b). *Lesson planning for a healthy environment: Teachers working with the NCS (R-9)*. Howick Share-Net.
- NEEP-GET.** (2004c). *Enabling an environmental focus in Life Orientation: a policy interpretation guidebook for the Revised National Curriculum Statement for GET*. Pretoria: Government Printer.
- NEEP-GET.** (2005). *A critical dialogues monograph. Building capacity for environmental learning in South Africa's education system: Openings for the UN Decade on Education for Sustainable Development. National Environmental Education Project for General Education and Training*. Howick: Share-Net.
- O'Donoghue, R.** (2001). *Environment and active learning in OBE*. Howick: Share-Net.
- Organic classroom: Teacher resource material Foundation Phase Grades 1-3.** (2004). Observatory Schools Environmental Education and Development.
- Paizee, D., Saadien-Raad, K. & Siegrühn, A.** (2003a). *Successful Life Skills Grade 1: Teacher's Book*. South Africa: Oxford University Press.

- Paizee, D., Saadien-Raad, K. & Siegrühn, A.** (2003b). *Successful Life Skills Grade 2: Teacher's Book*. South Africa: Oxford University Press.
- Patton, M. Q.** (1995). *Qualitative evaluation and research methods*. (3rd ed.). London: Sage.
- Radnor, H. A.** (2001, 2002). *Researching your professional practice; doing interpretive research*. Buckingham: Open University.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Choi, M., Sanders, D., Benefield, P.** (2004). *A review of research on outdoor learning*. London: National foundation for education research and Kings' college.
- Rogoff, B.** (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Saadien-Raad, K. & Siegrühn, A.** (2003). *Successful Life Skills Grade 2:Learner's Book*. South Africa: Oxford University Press.
- Saadien-Raad, K. & Siegrühn, A.** (2003). *Successful Life Skills Grade 2:My Workbook*. South Africa: Oxford University Press.
- Schunk, D.** (1996). *Learning theories* (2nd Ed). Columbus: Prentice Hall.
- Scott, H. K., & Hunting, L.** (1977). *Keiskamma river basin study. Volume 1: general evaluation*. Cape Town: Government Printer.
- Sotashe, P., & Jokweni, M.** (2003). *Ubuchule bokumelana nobomi Isigaba 1: Incwadi yomsebenzi (isiXhosa)*. South Africa: Oxford University Press.
- South Africa.** (1996). *Constitution of the Republic of South Africa: Act 108 of 1996*. Pretoria: Government Printer.
- South Africa. Department of Agriculture.** (2004-2005). *Amahlathi service delivery plan*. Keiskammahoe: Amahlathi Agricultural Office.
- South Africa. Department of Education.** (2002a). *Revised National Curriculum Statement (R-9) (Schools). Arts and Culture*. Pretoria: Government Printer.

- South Africa. Department of Education.** (2002b). *Revised National Curriculum Statement Grades R-9 (Schools). Languages: English–Home Language*. Pretoria: Government Printer.
- South Africa. Department of Education.** (2002c). *Revised National Curriculum Statement Grades R-9 (Schools) Life Orientation*. Pretoria: Government Printer.
- South Africa. Department of Education.** (2002d). *Revised National Curriculum Statement (R-9) (Schools). Natural Sciences*. Pretoria: Government Printer.
- South Africa. Department of Education.** (2002e). *Revised National Curriculum Statement Grades R-9 (Schools). Overview– English*. Pretoria: Government Printer.
- South Africa. Department of Education.** (2002f). *Revised National Curriculum Statement (R-9) (Schools). Social Sciences*. Pretoria: Government Printer.
- South Africa. Department of Education.** (2003). *Teacher’s guide for development of learning programmes*. Pretoria: Government Printer.
- South Africa. Department of Education.** (n.d.). *A teacher’s INSET Programme for Foundation Phase (Grades R- 3)*. Pretoria: Government Printer.
- South Africa. Department of Education.** (n.d.). *Environment in the National Curriculum Statement: Guidelines for learning area working groups writing learning outcomes for the NCS*. Pretoria: Government Printer.
- South Africa. Department of Education.** (n.d.). *Integrated quality management system (IQMS) training manual for educators*. Pretoria: Government Printer.
- South Africa. Department of Water Affairs & Forestry.** (1998). *Amatola hiking trail network pamphlet*. Pretoria: Government Printer.
- South African Bill of Rights: Chapter 2.** (1996). Retrieved January 06, 2006, from <http://www.polity.org.za/html/govdocs/constitution/saconst02.html?rebookmark=1#24>
- Strauss, A., & Corbin, J.** (Eds.). (1997). *Grounded theory in practice*. California: Sage.
- Terre Blanche, M. & Durrheim, K.** (Eds.). (1999). *Research in practice: Applied methods for the social sciences*. South Africa: University of Cape Town Press.

Terreblanche, S. (2002). *A History of Inequality in South Africa 1652-2002*. South Africa: University of Natal Press.

Unesco. (2004). *United Nations decade of education for sustainable development 2005-2014*. Draft international implementation scheme. Paris: Unesco.

Visvanath, N., Duggan, L., Nisonoff, L., & Wiegersma, N. (Eds.). (1997). *The Women, Gender and Development Reader*. London: Zed Books.

Weaver, A., Le Roux, W. & Pretorius, R. (Eds.). (1999). *State of the environment in South Africa: An overview*. Pretoria: Government Printer.

Wickenberg, P., Axelsson, H., Fritzen, L., Hellden, G. & Ohman, J. (Eds.). (2004). *Learning to change our world; Swedish research on education & sustainable development*. Lund: Studentlitteratur.

Wilson, F., & Ramphela, M. (1989). *Uprooting poverty*. South Africa: Creda Press.

Yin, R. K. (1994). *Case study research: design and methods*. Thousand Oaks California: Sage.

Personal communications

Ncula, M. A. (2005, November 15). Educator, Kama High School, Middledrift. Personal communication.

Schudel, I. (2005, November 12 & 14). Supervisor, Faculty of Education, Rhodes University, Grahamstown. Personal communication.

Appendices

Appendix 1

What do you think school food gardens are for in your schools?

1. Who is responsible for the school food gardens?
2. Do you think the school food gardens are playing a vital role in contextualising the curriculum?
3. If they are, how are they contextualising the curriculum?
4. Could you find the links between the Learning Area Outcomes, RNCS Principles and the use of school food gardens?
5. If there are links what are they?
6. Do you understand what the Learning Outcomes and the Assessment Standards expect you to achieve in relation to the school food gardens?
7. Can you think of an example of a Learning Outcome and Assessment Standard that can show an achievement of expectations through the use of school food gardens/
8. Could you easily design lesson plans that have an active learning focus, drawing from the RNCS Principles, Learning Outcomes and Assessment Standards using the school food gardens?
9. Do you have an idea or understanding of what principle can inform the Life Skills learning and teaching processes?
10. What environmental issues do you think the school food garden is trying to address in your school or the community, be it social, economical, biophysical, health, political etc.?

Prompts:

- Poverty
- HIV/AIDS
- Soil erosion
- School improvement etc.

Appendix 2

Food gardens, environmental lesson planning and active learning in the Life Orientation Learning Area – Foundation Phase.

I wish to conduct focus group interviews with regard to my research project on creating links between the food gardens and the curriculum. My research entails working with educators in schools that have an interest in understanding the 4-H programme better as far as the curriculum is concerned. My study will be an action research case study at Lungeloethu L/HP School.

- The aim is to develop 2 environmental lesson plans with an active learning focus.
- The lessons plans will be trialed and reviewed with a view to making recommendations to the 4-H programme for improving links between food gardens and the curriculum.

The focus group interviews will help in the review practice on how food gardens are used for the implicit and explicit learning processes. In carrying out the research I promise to acknowledge the help of those who will participate and also to respect their confidentiality. You may withdraw from the research project at any point should you feel that I am not honoring the terms of the agreement.

Signature of the research coordinator:
N.S. Ncula

I Nolitha Madikane educator at Ndlovini H.P. Primary school agree to participate in this research project on school food gardens and the curriculum. I agree that the research may improve the links between the school food gardens and the curriculum.

Signature of the educator:
Date:

N. Madikane 14/04/05

Appendix 3

Lungeloletu L/HP School
P.O. Box 159
Keiskammahoek
22-March-2005

Mzali womntwana

Ndiyacela ngemvumelwano yethu sobabini ukuba umntwana wakho abe yinxalenye yophando oluzakuthi luqhubeka kwizifundo zakhe kuwo lonyaka sikuwo. Wonke umntwana ofunda kwibakala lokuqala nelesibini uzakusetyenziswa kweli phulo ngenjongo yokuphucula indlela abafunda ngayo. Ndiyakuqinisekisa akukho bungozi okanye kungathembakali kolu phando koko kukuncedisana notitshalakazi wabo kwizifundo azenzayo phaya kwanokholeji obizwa ngokuba yi 'Rhodes University'.

Ukuba ukholwa ukuba amagama omntwana angasetyenziswa ngobunjalo bawo koko kuthiywe magama wambi ngokuphathelele kwezi zifundo kuyakwenzeka njengoko uthanda. Ndicela usayine ngezantsi.

Enkosi mzali
N.S. Ncula (Mrs)

Parent Signature: *Z. Matongo Sava*.....

Appendix 4

Day 3
Act 2
+ 3
09/08/08
On this day, the learners were working in groups to discuss pictures that showed good or bad things that people do in nature. I could see that, there were other learners who were not contributing to the discussion. I walked around the groups and asked some probing questions focusing especially to those who were not participating. I also found that the reason

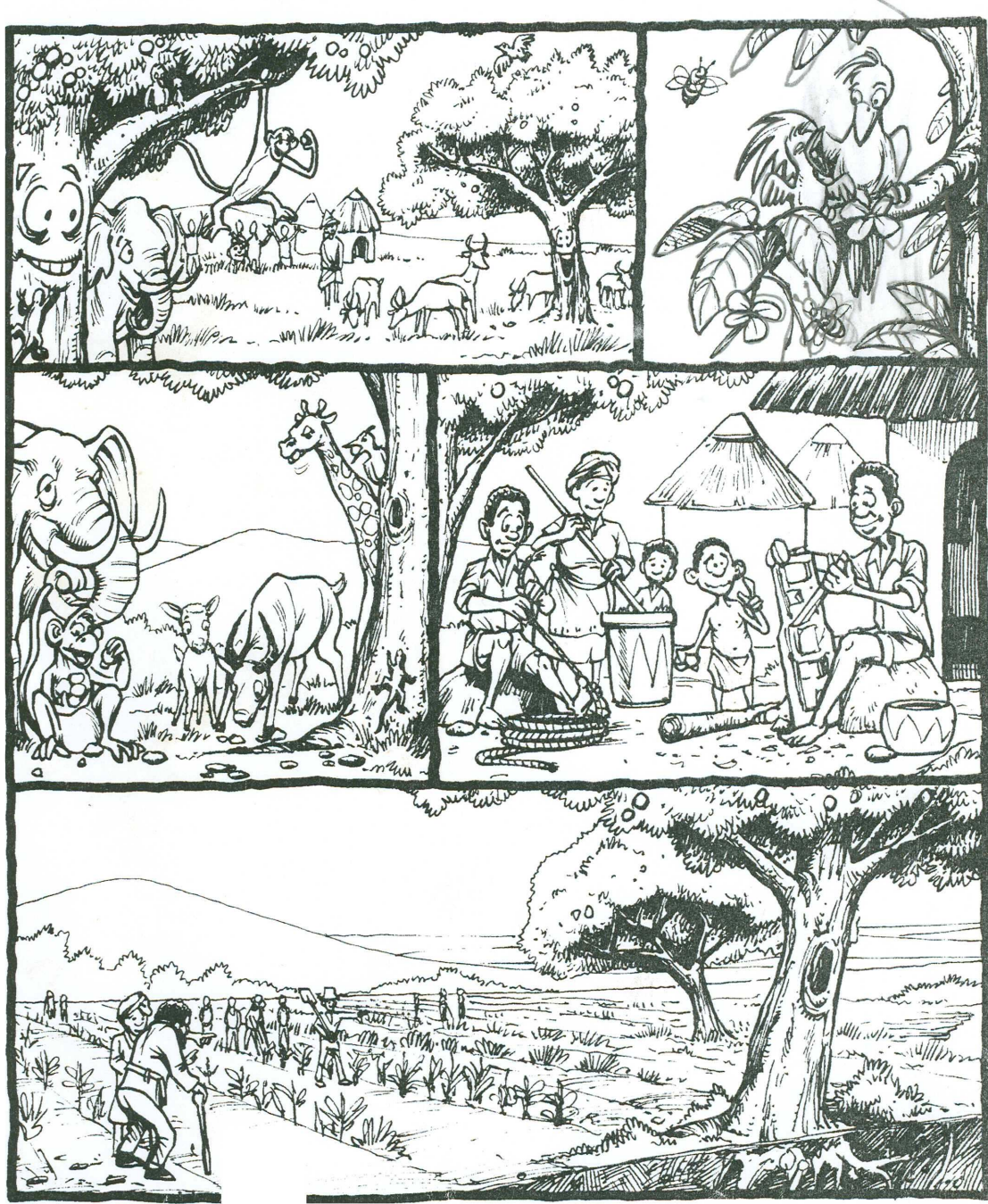
why they were not participating is because of the and other learners are dominating in groups. After the reports by the groups, learners work individually the same pictures to show if they understood what was discussed. It was surprising to find that some of the pictures I thought they were showing wrong things were found to be right things by learners vice versa. For example picture 2 is showing a child smelling flowers and the other child picking a flower. ~~Five~~ ^{Six} responses on the pictures showed both actions are good. When I asked why they think picking flowers is right, they told that are put at homes in a vase. Others told that, they think the child is going to pick the flower at another place. Others told that, some learners brought the flowers at school on the Valentines day and when I asked why they did that, they did not know.

Appendix 5

LESSON PLAN on: Caring for nature DURATION: 6 days		GRADE: 1 LEARNING PROGRAMME: LIFE SKILLS
LEARNING OUTCOMES AND ASSESSMENT STANDARDS: LIFE ORIENTATION: LO1- HEALTH PROMOTION- The learner will be able to make informed decisions regarding personal, community and environmental health. AS2- Describes steps that can be taken to ensure personal hygiene.	INTEGRATION: (INTEGRATION ACROSS) Languages: LO1- Listening Social Sciences: LO3- Geographical issues Arts and Culture: LO1- Visual arts Life Orientation: LO4- Physical Development	
LINKS WITH PREVIOUS LESSONS: Learners have learnt about different features of the earth e.g. Water	LINKS WITH NEXT LESSONS: Explore and report links between a healthy environment and personal health.	
CORE KNOWLEDGE: Can learners identify environmental issues and what actions can be taken to prevent harm to the environment.	CONTEXT: School environment and the surroundings.	
LEARNING ACTIVITIES: Activity 1- Story telling The teacher reads the story of the ‘Amazing Marula Tree’. The pictures about the story are pasted on the chalkboard for the learners to follow the story in a sequential order. They are asked question about the story and to imagine how it would be like to have no natural resources like water, trees, soil etc. Activity 2- Identifying issues The learners are given an exercise from the Oxford learners books to discuss about the pictures on page 74 and 75. They are to discuss which pictures showed the correct and which pictures showed the wrong things that people are doing in nature. In their discussions, they are expected to explain why they think some pictures are right and others wrong. They also have to discuss what could happen in nature if people do wrong things all the time. The groups have to report their discussions about the pictures to the class so that they could be able to understand the activity as they would be doing it as individuals after the group reports. Activity 3- Identifying issues Each learner have to complete activity on page 74 and 75. they write a sentence on the space provided on page 75 about the picture that interests him/her. The sentence should tell what is happening in the picture. Activity 4 Learners think and decide about something that they enjoy doing for nature. Fro example, watering plants, planting flowers, preparing soil for planting, picking up litter etc. They draw pictures to show what they have chosen to do. They show and tell the drawings to the class. Activity 5 The learners suggest three things that they think are most practical, popular and need urgent consideration to be addressed in their environment. They record their suggestions on page 76 of their workbooks. Activity 6 Using the number heads together method for grouping learners, the groups are instructed to name themselves according to shapes they are to design in the garden. Back from the garden they draw the shapes they belong to, showing which vegetables they would like to plant in their plots.		
PLANNED ASSESSMENT TASKS FOR RECORDING: <ul style="list-style-type: none"> • Can learners identify environmental issues? • Can learners see the need to take action to prevent harm to the environment? • Can learners present their ideas in art form? • Can learners perform tasks in the garden using garden tools? • Can learners work in groups? 	RESOURCES: Pictures, Learners books, Crayons, Pencils, Garden Tools, Garden, Worksheets.	

<p>EXPANDED OPPORTUNITIES: Getting to know the environment in which the learners live. Understanding how the environment helps to explore learning opportunities.</p>	<p>TEACHER REFLECTION:</p>
<p>CRITICAL AND DEVELOPMENTAL OUTCOMES:</p> <ul style="list-style-type: none"> • CO1: Identify and solve problems; make decisions using critical and creative thinking. • CO2: Working effectively with others as members of a team, organisation and community. • CO3: Communicate effectively using visual, symbolic and or language skills in various modes. • DO1: Reflect on and explore a variety of strategies to learn effectively. • DO2: Participate as responsible citizen in the life of local, national and global community 	

Appendix 6a



Stories for page 60

The amazing marula tree

The people, animals and insects of Ingweze village were arguing. There were only two large marula trees left in the middle of a field – a male and a female tree. The people, animals and insects were worried. The trees gave many gifts, but were two trees enough? The fruit was coming soon. Who would eat it? They asked the Great Chief to help them.

'Let's have a court case,' said the Great Chief. 'Each of you must tell me why you need the trees. But, you must also show me how you are helpful and respectful to the marula trees in return. Whoever wins the case can use the trees. We will fence the trees and lock the gate. The winner will get the key to the lock.'

'But we love you all,' said the great old Marulas in their deep, woody voices. 'Don't fence us in. If you look after us, and respect us, we want to share our gifts with you all.'

'No, Great Trees,' said the Chief. 'There are only two of you left, and many, many of us.'

So each group came and said their case for being the owner of the trees.

Picture 2:

'The Great Marulas were just growing their flowers. Bzzzzzz, oh Chief,' said the bees and wasps. 'The treeeezzzz need us. Bzzzzz. We carry pollen from the flowers of male trees to female trees. This is how the trees can make seeds grow into baby trees. Bzzzzz ... And the marula flowers give us nectar to eat and nectar to feed our baby bees and wasps.'

'Yeess, tweet, twirrr,' chirped the birds. 'Birds need the tree to make our homes in. We eat the nectar in the flowers and we eat the insects which eat the flowers,' sang the birds. 'We make sure there are not too many insects on the trees.'

'Tok tok tok,' knocked the woodpecker. 'I love the marulas' soft wood to make my home. Tok tok tok!'

'We respect the tree and do it no harm,' sang all the birds.

The Marulas began dropping great heaps of yellow fruit to the ground. Elephants, buck and baboons rushed to eat it. Their stomachs swelled out with the delicious fruit. 'This fruit skin and flesh is so healthy. Oh, and the nut inside – full of rich oil and pulp. Yummy yummy!' barked the baboons. 'And don't forget how we carry the seeds,' rumbled the elephants shyly, because they were embarrassed to talk about such things. 'We eat the whole fruit. Then we excrete the seeds away from here so new marula trees can grow in a nice open place.'

Picture 4:

'We also love to eat the marula fruit – all that healthy fruit is good for us too,' said the village people. 'We can eat the fruit fresh, and put it into our porridge. We crush up the nuts and make a delicious marula-nut butter to use in our cooking. We also make oil from the crushed nuts. We make a drink by soaking the fruits, and make beer for the elders to drink. Some of us offer the beer on our ancestors' graves,' said the people.

'We carve the wood to make bowls and spoons, we use the bark to make dye for our baskets,' said the craftspeople.

'And we use the tree leaves and bark to make many medicines,' said the healers.

'We definitely use the trees the most!' shouted all the villagers.

'Shew!' said the Chief. 'You village people certainly use the trees for lots of things. But wait! What do you give the trees in return?'

'We honour the trees as sacred and special,' said the people.

'Then why have they all been cut down, except these two?' asked the Chief angrily.

The villagers looked ashamed. 'We needed wood to cook with. We needed to clear the land for vegetables and crops. We needed building materials,' they said.

'You did not leave enough! And now you have almost nothing!' shouted the chief angrily. 'When you cut a tree, always plant and look after a new one in its place.'

Now an old, old man and woman came forward. The old man said in his soft, wavering voice, 'We were farmers. This field with the marulas was our field. When we grew too old we went to live with our children in Egoli. Now we have come home again for our last years. You have heard how the trees help the insects, birds, animals and people. But do you know how they help farmers – the same farmers who in this place foolishly cut *all* the marulas out of their fields?'

The old man went on, 'We kept our marulas because the roots hold the soil and stop it being washed away in heavy rain. They stop the wind blowing away our soil. The trees give shade to us and our crops. They drop their leaves and old branches as food for the soil. They give us food in the drought when other crops fail.'

'Welcome back, old friends!' creaked the old Marulas, and they shed slow, sticky sap tears at seeing their old farmer friends again.

'Now I have a surprise for you,' said the old woman. 'Follow me.' She took the villagers, animals and insects on a long walk through the koppies to a hidden kraal.

The people stared, amazed. There were hundreds of strong, proud young marulas growing in old drums. 'This is my plantation,' said the old woman proudly. 'Each year I planted and cared for a few new trees, for I knew they would be needed in future. When they were tiny seedlings I covered them from the frosts, and watered them in the terrible droughts. I

put thorns round them to protect them from animals. Now, I give them to you people and animals, to plant in the fields and near your homes. We can see you now understand the value of marula trees,' said the old man and woman.

The Chief smiled. 'Old people – welcome home! I declare you to be honoured villagers and we will all care for you until you die. That is small repayment for the gift of these young trees. And now we do not need to lock up your old trees! YOU can decide who will visit your trees, until these new trees start bearing.'

— 21

Ukukhathalela indalo

ntombosindiso of May-2005

Yintoni na elungileyo emayenziwe?



Ewe

Hayi



74 N.S. Mula
09/05/05
☺

Ntombosindiso



isivakalisi. usisi ubeke ibhoketi
ukuze amanzi akuzel
kulo angamoshakali.

Appendix 8

L2

Ongezwa 11-May-2005
Yintoni enokuyenzela indalo ikhosi yam

1 Sinako ukulabla amaphapha emgqomeni.

2 Sinako ukutyala egadini.

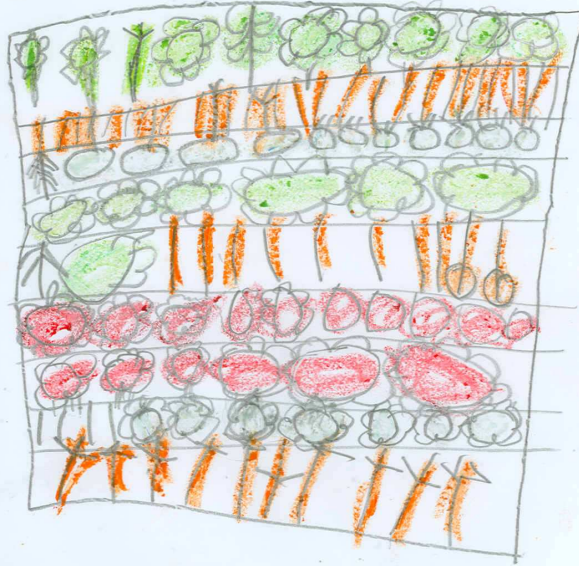
3 Sinako ukukcenkcesthela egadini.

M. S. K. K. K.
11/05/05 ☺

Appendix 9

Sesona
L17

12-May-2005



M.S. Akula
latos/05 (1)

Appendix 10

LESSON PLAN on: The richness of soil DURATION: 7 days		GRADE: 2 LEARNING PROGRAMME: LIFE SKILLS
LEARNING OUTCOMES AND ASSESSMENT STANDARDS: LIFE ORIENTATION: LO1- HEALTH PROMOTION- The learner will be able to make informed decisions regarding personal, community and environmental health. AS2- Describes steps that can be taken to ensure personal hygiene.	INTEGRATION: (INTEGRATION ACROSS) Languages: LO4- Writing for different purposes. Natural Sciences: LO1- Scientific investigations. Arts and Culture: LO1- Visual arts; creating, interpreting and presenting. Life Orientation: LO4- Physical Development.	
LINKS WITH PREVIOUS LESSONS: The learners have learnt about the importance of water which is the natural resource like soil.	LINKS WITH NEXT LESSONS: Explore ways of making soil healthy e.g. making compost.	
CORE KNOWLEDGE: Life and Living-learners have to understand human and non-human interaction with the environment. All living things depend on soil. Soil has to be sustained for living healthy.	CONTEXT: School environment and the surroundings.	
LEARNING ACTIVITIES: Activity 1- Understanding soil The teacher brings the different types of soil samples to the class e.g. sand, gravel, clay and loam to the learners. The learners describe the soils according to colour, texture, smell and where they think the soils were taken from. The learners are encouraged to use their first language Xhosa. The teacher translates the Xhosa words into English and writes on the board. The learners have to look at page 41 in the learner's book and discuss the pictures. They complete the activity on the worksheets. Activity 2- Field walk – investigating types of soil The teacher reads on page 34 of the learner's workbooks. The learners have to understand what is expected of them on page 34 as they are to take a field walk describing different types of soils at different places. Back from the field they complete activity 34. Activity 3- Soil test The learners work in small groups to do soil test. Different soils were tested to see their capacity for absorbing water. The results are discussed in class and the learners given worksheets to record their findings for the soil test. Activity 4- The importance of soil The teacher reads from the learners books about the importance of soil. She also bring in the information she got from S.e.e.d material to explain the importance of soil. For example she tells that the most outer layer of the earth is covered with soil with rocks underneath. Animals, people and plants need soil to live and they all depend to each other. The learners are asked to do exercise on page 33 of their workbooks. Activity 5- Understanding soil erosion T teacher introduces the concept of soil erosion. They discussed the ways people cause soil erosion referring also to the information on page 44 of the learners' books. They also discuss how soil erosion happens because of natural causes like rain. They discuss how they can prevent soil erosion. The learners were tasked to design posters that show cared for and uncared for soil		
PLANNED ASSESSMENT TASKS FOR RECORDING: <ul style="list-style-type: none"> • Do learners use their senses to describe different types of soils? • Do learners use descriptive language to describe soils? • Can learners follow instructions to observe record and report their findings? • Can learners investigate and identify causes of soil erosion and how they could prevent it? 	RESOURCES: Samples of soil, learners books and workbooks, water, worksheets, crayons, pencils, glue, blank papers for posters.	

<ul style="list-style-type: none"> • Can learners the main points when making posters? 	
<p>EXPANDED OPPORTUNITIES: Caring for soil at school, home and the community. Caring for the environment and investigate what measures can be taken to respond to environmental issues.</p>	<p>TEACHER REFLECTION:</p>
<p>CRITICAL AND DEVELOPMENTAL OUTCOMES:</p> <ul style="list-style-type: none"> • CO1: Identify and solve problems; make decisions using critical and creative thinking. • CO2: Working effectively with others as members of a team, organisation and community. • CO3: Communicate effectively using visual, symbolic and or language skills in various modes. • DO1: Reflect on and explore a variety of strategies to learn effectively. • DO2: Participate as responsible citizen in the life of local, national and global communities. 	

Looking at soil

Talk about the pictures ...

- What does soil look like?
- What does soil feel like?
- What does soil smell like?
- Is the soil at your home and your school the same as the soil in these photographs?

Did you know?

Sand is made of tiny bits of rock and broken sea shells. Soil is also made of bits of rock but with rotten leaves, plants, creatures and other things in it.

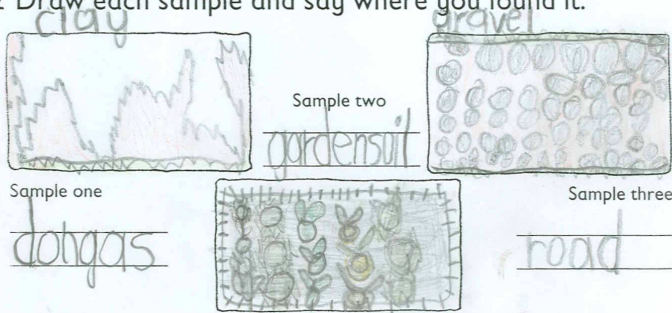


Appendix12

342 Liyabona 26-July-2005
The soil around your school or home

What is the soil like around your school or home?
Let's find out.

- 1 Look at soil samples from three different places around your school or home.
- 2 Draw each sample and say where you found it.



3 Which sample had the best soil? garden soil.

4 Explain why this was the best soil.
What does it look like and what does it feel like?

good reason
we plant vegetables.
garden soil is brown.
garden soil is rough.

34

See Learner's Book, page 41

^{BLS}
Try this soil test

Wanda 28 July 2005

You will need:

- a medium or large sized glass jar with a lid
- some soil from the garden
- water

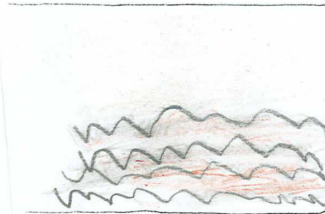


- 1 Put the soil in the jar.
- 2 Fill the jar almost to the top with the water.
- 3 Shake the jar.
- 4 Now put the jar down and see what happens to the soil.
- 5 Fill in the missing words to describe what happens.

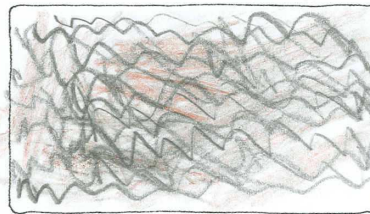
sink smallest biggest slowly

The smallest pieces sink to the bottom first.
These are the sandy pieces. The biggest
pieces sink slowly. These are clay pieces.

Leave the jar and look at it again tomorrow.
Does it look different? Draw what you see.



day



Today

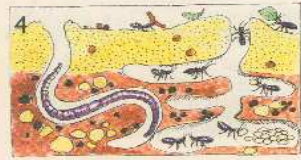
Warner's Book, page 41

35

Wanda (with a smiley face)

Why soil is so important

Plants, animals and people need soil to live. If we had no soil, there would be no plants or trees to give us wood. We would have no food to eat or things to build our homes with. Animals and people would die if there was no soil.



Talk about the pictures ...

- Why is soil important to us?
- What can soil be used for?
- Which animals in picture 1 use soil to make their homes?

Appendix 15

3L4
it 11 | The richness of soil

Looking at soil

Imethu 02-August-2005

Write five sentences to explain why healthy soil is important.

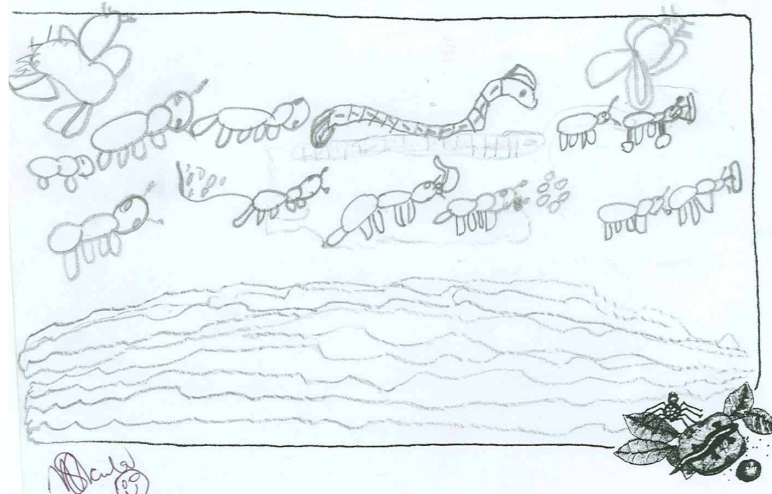
1. We rely on soil for living or survival
2. Most plants grow in soil and get water.
3. Some animals live in soil.

4. We use clay soil to make clay cows.
5. We build houses with soil. Cubes, cards.

Draw and label an underground picture of creatures that use the soil as a home.

Use the following labels and add more of your own:

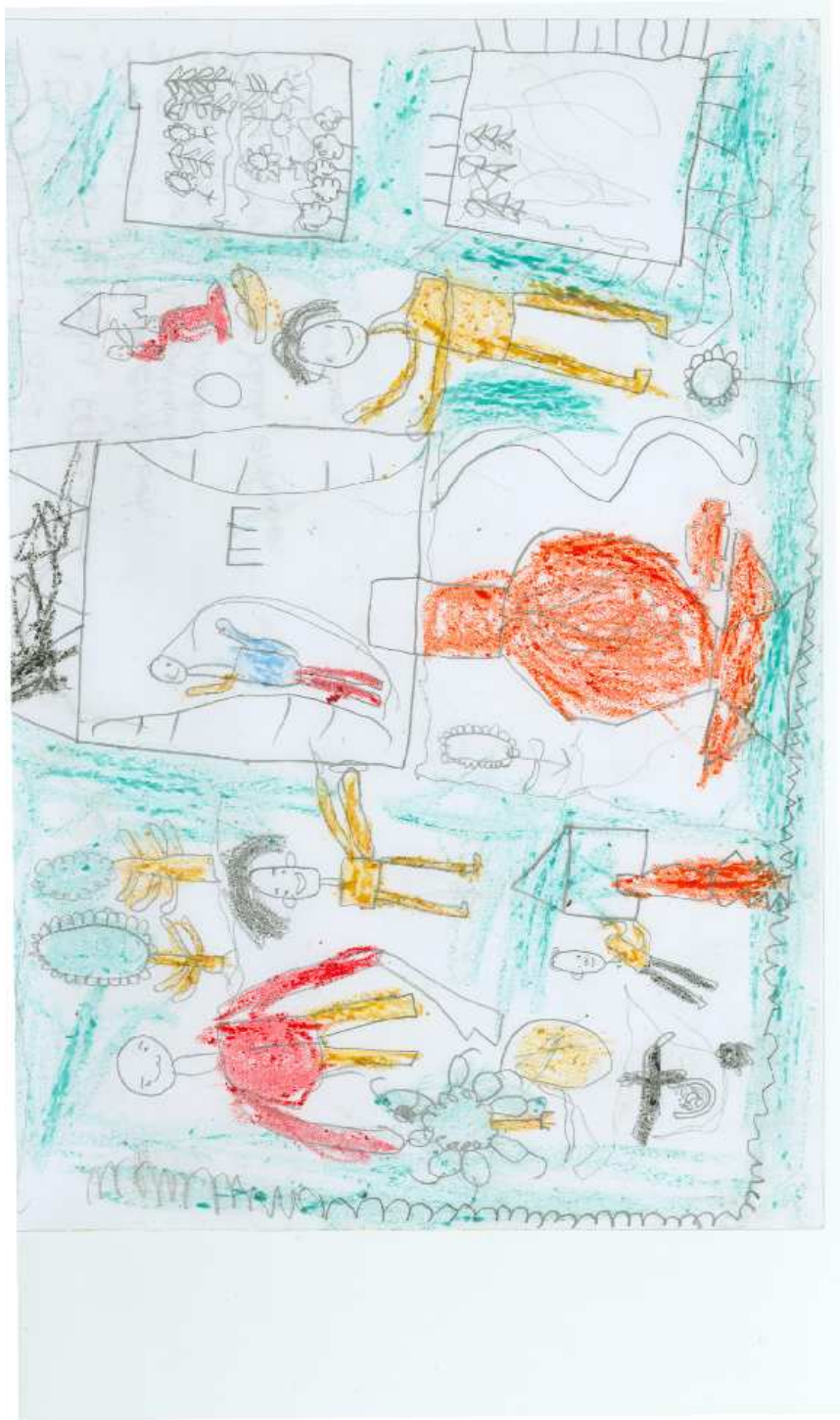
earthworm ants mole snake meerkat mongoose



Teacher's Book, pages 41-44

33

Appendix 16a



Appendix 16b

- Lukhanyo 01 August-2005
1. Sakha izindlu ngomhlaba.
 2. Imotozihambo emhlabeni.
 3. Iirhorho zihlala emhlabeni.
 4. Izityalo zikhula emhlabeni.
 5. Intyatyambo zikhula emhlabeni.
 6. Ingca ikhula emhlabeni.

Appendix 17

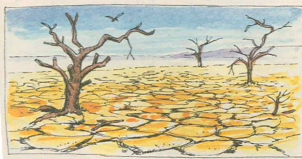
Caring for our soil

The earth is covered by layers of soil that are very thin in some places and very deep in other places. There are rocky layers under the soil. The roots and leaves of plants hold the top layers of soil together. The roots and leaves also protect the soil and keep it healthy.

If there were no plants in the soil, the wind would blow the soil away and the rain would wash it away. We call this process soil erosion. Droughts and fires can also cause soil erosion. During a drought or fire, the plants die and are no longer able to protect the soil. The soil is then washed or blown away.

Think about these pictures ...

- What caused the soil erosion?
- What has happened to the land?



Harmful humans

Humans sometimes cause soil erosion because they do not look after the land properly.

Think about these pictures ...

- What has caused the erosion?
- What will happen to the land now?
- What can be done to stop this happening again?

