CHAPTER ONE

GENERAL ORIENTATION

1.1 INTRODUCTION

The launching of Curriculum 2005 by the then Minister of Education in March 1997 indicated and marked a significant change in the history of education in South Africa (Enviro Feature, 1997:3). Most importantly, to the "environmental education community," which was initiated in the 1980's, to have environmental education as part of the school curriculum was a victory (Mosidi and Tselane, 1998:5). The 1989 White Paper on Environmental Education was the first attempt to include environmental education in the formal curriculum (Mosidi, 1997). The White Paper's inclusion of the guidelines adopted at the international conferences held in Belgrade (1975) and Tbilisi (1977) was an encouraging shift from narrow interpretations of environmental education held up to this point. However, this policy process was not broadly inclusive and resulted in little implementation in formal education. In 1992 the Environmental Education Policy Initiative (EEPI) was started as a more inclusive process of gathering and developing environmental education policy options for formal education in South Africa. A significant outcome of this process was the inclusion of environmental education in the Government White Paper (1995:22) on education and training, as one of the key principles for education and training policy in a new South Africa. Principle No. 17 states: "Environmental Education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources."

The White Paper on a National Policy regarding Environmental Conservation, published in 1980, gives prominence to environmental education and lays down broad policy guidelines in this regard. The Government already committed itself to the implementation of this policy (White Paper on Environmental Education, 1989:5). The guidelines are incorporated in the White Paper on Environmental Conservation and in

the Environmental Conservation Act, 1982 (Act 100 of 1982). These guidelines are also in line with those for effective environmental education adopted by the international conferences on environmental education held in Belgrade (1975) and Tbilisi (1977) (White Paper on Environmental Education, 1989:5).

Our Constitution enshrines the right of every citizen to a healthy environment (Bill of Rights, 1996:10). The government, like many African and other governments, supports Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) stating that environmental education is critical for sustainable development (UNCED, 1992, Chapter 36:2). This concern is reflected in the ANC Reconstruction and Development Programme (RDP) which advocates "programmes to rekindle our people's love of the land, to increase environmental consciousness amongst our youth, to co-ordinate environmental education policy at all levels, and to empower communities to act on environmental issues and to promote an environmental ethic" (African National Congress, 1994:40).

For the purpose of man's survival, emphasis should be focused on the need for a healthy environment. Through this research the learners in schools will be able to identify with the various elements of the environment and their interrelationships. This research will also assist to motivate the learners to accept responsibility for the environment, to cultivate the necessary knowledge, skills and values to find solutions for the problems identified through the school environmental education policies. These policies, however, have to be implemented to become effective. By being effective, it would enable future generations to respond to environmental issues in ways that could foster change towards sustainable community life in a healthy environment. Research for this study focused on the effective implementation of environmental education policies at school level.

1.2 BACKGROUND TO THE STUDY

Environmental issues are complex and multi-faceted. Therefore, environmental education programmes which transfer only information about environmental issues will

be futile. Environmental education is a continuous process of equipping people with the knowledge, attitudes, skills and commitment (action competencies) to address socio-ecological issues (Janse van Rensburg & Lotz, 1998:9). Formal education in the context of an outcomes-based system which emphasizes the integrated development of knowledge, skills and competencies, has an essential role to play in the process. Learning programmes which include environmental concerns from a socio-ecological and a socio-historical perspective, to emphasise sustainable development and management of life-sustaining support systems needs to resolve and prevent environmental issues which are vital to South Africa's development (Janse van Rensburg & Lotz, 1998:9). Environmental education is a process through which the present and the future generations should be able to respond to environmental issues in ways that might foster change towards sustainable community life in a healthy environment (Janse van Rensburg & Lotz, 1998:10).

By recognising the opportunities for including environmental concerns and activities in learning programmes, the Environmental Education Curriculum Initiative (EECI) recognises the potential of the new curriculum framework to initiate and support quality learning experiences for South African learners. However, the EECI is particularly concerned with the lack of coherence (across and within learning areas) between the assessment criteria and range statements in C2005 and strengthening the implementation of teacher orientation and training as well as learning support materials and provincial support in the Revised National Curriculum Statement (Janse van Rensburg & Lotz, 1998:12).

In 1992 an Environmental Education Policy Initiative (EEPI) was initiated to encourage a broad, participating process of curriculum development for environmental education in South Africa. The ultimate aim of improving the quality of education in South African schools, as well as the quality of life of the South African people through effective environmental education was evident in 1996 with regards to EEPI's success and progress of the national educational policy (Janse van Rensburg & Lotz, 1998:1).

In South Africa environmental policies emphasise the need for environmental learning and capacity building in all walks of life. The various government policies suggest that

environmental education needs to be incorporated as part of education and training at all levels and in all sectors. There was therefore a need for the Department of Education to provide an enabling framework to facilitate the implementation of environmental education, in an integrated and interdisciplinary manner into all levels, programmes and phases of the education and training system. This is in accordance with the principle of the White Paper on Education and Training, which states that environmental education should be a vital element of all levels and programmes of the education and training system. On 5 June 2000, (World Environment Day), the Ministry and Department of Education officially launched the National Environmental Education Programme (NEEP) and in so doing, made a commitment to the development of environmental education for South Africa (NEEP, 2001:1).

By implementing the fundamental right included in the new Constitution, "every citizen has the right to an environment that is not detrimental to his or her health or well being," a need arose to undertake this research in schools. Through curriculum development the quality of education would improve in schools to ensure environmentally responsible behaviour of learners and make them aware of the fact that a sustainable way of living is dependent on their judicious utilisation of the environment. By doing so, environmental education would be included within the curriculum through the implementation of the school environmental education policies.

1. 3 PURPOSE OF THE RESEARCH

The effective implementation of a school environmental education policy aims to achieve two important outcomes. They are:

- To enable better teaching and learning.
- To contribute to a healthy, enriching, happy and more sustainable environment (School Resource Pack, 2000:5).

The school environmental education policies should enable better teaching, learning, contributing to a healthy, enriching, happy and more sustainable environment by ensuring that environment is integral to each learning area:

- Ensuring that the local environment (school grounds and surrounding neighbourhoods) is central to the development of active learning programmes.
- Ensuring that learners actively participate in all learning opportunities or situations, for example, in auditing resource use and subsequent decision making.
- Ensuring that school resources are managed more wisely.
- Ensuring a reduced impact on the environment (School Resource Pack, 2000).

For a school environmental education policy to be functional and effective, an outline for implementing mechanisms such as environmental audits, programmes, action plans, policy statements, evaluation and review must be made. The continuous review, monitoring and evaluation of the school environmental education policy should help schools to check whether they are progressing the way they had planned and allow for continuous improvements. The school environmental education policy should set a course of direction to co-ordinate, network and execute all mechanisms as stated above. It should be clear as to who should do what and how in order to ensure implementation of an environmental education policy in the curriculum of South African schools. (SADC, 1999:34).

1.4 STATEMENT OF THE PROBLEM

Environmental education, as defined at the Tbilisi Conference, greatly differs from environmental study which dominated in schools for many years. The subject environmental study is aimed at transmitting knowledge about the environment, whilst environmental education is seen to play a much wider role. The emphasis in environmental education is on education provided for all citizens on environmental themes and issues at appropriate levels-education about, through and for the environment, which includes not only an integrated development of environmental knowledge, attitudes/values and behaviour, but also addresses the commitment of people to environmentally responsible behaviour (Johnson in Bakshi & Naveh 1978:81; Tilbury 1992:274-275 & 1995:206-207; Ballantyne & Packer 1996:28). In 1992, the first of three programme areas identified by the Earth Summit (Agenda 21, Section IV, Chapter 4: Education, Public Awareness and Training) was announced. It promoted the

inclusion of environmental education from the primary stage through to adulthood. Agenda 21 of the Earth Summit also called for the re-orientation of environmental education for sustainability (EEFS), a new focus which builds upon the characteristics of previous approaches, but adds concepts such as relevancy, an issue-based approach, action-orientation and values education (Caduto 1985: 30-34; Ramsey, Hungerford & Volk 1992; Tilbury 1995:199-210; Values in Environmental Education Conference Report, Stirling, Scotland 1993). The integration of an environmental approach into the school curriculum became inevitable.

The inclusion of 'environment' into the learning programmes within C2005 the National Curriculum Statement was a result of the recognition of environmental concerns in South African schools. Localised learning programme development around the 'environment' enables teachers and learners to address environmental issues and problems, prevent environmental degradation and develop sustainable living patterns (Lotz, Tselane & Wagiet, 1998:7).

Inclusivity deals with a number of social justice and human rights issues and at the same time taps into the rich diversity of our learners and communities for effective and meaningful decision-making and functioning for a healthy environment. Schools are encouraged to create cultures and practices that ensure full participation of all learners irrespective of their cultures, race, language, economic background and ability. All learners come with their own experiences, interests, strengths and barriers to learning which need to be accommodated in the school environmental education policy (RNCS, 2002:10).

The key role the school environment plays in influencing learning and teaching opportunities has to be recognised. A healthy school environment is a supportive environment which fosters practices that reflect the principles of equity, effectiveness, responsiveness, participation and accountability, peculiar to environmental education (Queensland Department of Education 1993:75-6). The school management should encourage and determine an integrated approach to environmental education through

the implementation of the school environmental education policy. An integrated approach will contribute to the planning and practice – the whole process of the implementation of the school environmental education policy. The school environmental education policy needs to be worthwhile, workable and acceptable to the school community, that is the school management, parents, teachers, learners and the local community. It is desirable that schools should formulate their own policy according to needs of their particular school, local community and local environment School Resource Pack, 2000:1).

In view of the preceding information the research problem is as follows:

> Do schools have a school environmental education policy and if so, how successful are they at implementing it?

The following questions will focus on the research problem:

- Does a school environmental education policy ensure that environmental education is taken into account when developing the school curriculum?
- Does the school environmental education policy encourage the investigation of issues relevant to improving the implementation of environmental education in schools?
- Does the school environmental education policy stipulate clearly the need for strategies and action plans for implementing environmental education in the school curriculum?
- How can effective implementation of a school environmental education policy be ensured in schools?

The focus of the research is to provide answers to these questions.

1.5 RESEARCH DESIGN AND METHODOLOGY

The research is of a descriptive nature, in other words to describe the effective implementation of environmental education policies in schools.

A literature survey will be utilised in order to investigate and record issues relevant to the effective implementation of environmental education policies in schools. A questionnaire will be used to receive responses, opinions and difficulties encountered in implementing the school environmental education policies in schools.

1.6 CLARIFICATION OF CONCEPTS

PRE-REQUISITES FOR POLICY FORMULATION introduces some considerations that should be carefully thought through before drafting an environmental education policy. It is important to have a clear idea of what you wish to achieve by means of policy, and of the role you wish it to play in the broader context before deciding on specific content. The pre-requisites for policy formulation begin by introducing the aim and objectives of the guidelines, recognises the diversity that exits in the region, shows the role of research, monitoring and evaluation, looks at how policy can be made practical, identifies the role and function of the state, explores other considerations and lastly considers the role of environmental education principles (SADC, 1999:1).

POLICY FORMULATION addresses the issue of how policies are formulated, and offers a few examples of participatory policy development. In so doing, it elaborates on the importance of participation, the need for sectoral integration, and the role of advocacy (SADC, 1999:1).

IMPLEMENTATION raises issues about the practical application of policy that may influence how policies and guidelines are structured and what they contain. It considers the need for a good institutional framework, points out the importance of partnerships, and identifies key instruments for effective implementation of policy (SADC, 1999:1).

POLICY is an agreed expression of principles and values to guide action plans for improving school – based environmental activities (School Resource Pack, 2000:1).

CURRICULUM is the sum of all formal and informal teaching and learning experiences (School Resource Pack, 2000:1).

SUSTAINABLE LIVING is living so as not to restrict the freedom of present and future generations by harming the environment in which we must live and develop. It meets the needs of the present without compromising the ability of future generations to meet their own needs. Development in sustainable living is seen as both 'health and wealth' which is a socio-economic process of increasing people's life choices towards enhancing their well-being. This requires that the environment, economic and social forces are balanced (School Resource Pack, 2002:2).

THE ENVIRONMENT is the physical, biological and social world around us, as we know it (SADC, 1999:5).

ENVIRONMENTAL EDUCATION refers to the planned processes which enable participants to explore the environment, to investigate recognised concerns and to take action to make the world a better place for all living things (SADC, 1999:5).

1. 7 CHAPTER DIVISIONS

This dissertation consists of five chapters. The chapters have been structured as outlined below.

CHAPTER ONE is the introduction to this study. It provides the background and importance of conducting this research. The problem to be researched and the method of research are introduced and primary concepts used in this dissertation are clarified. It includes the statement of the research problem and the research aim. The purpose of this study is also highlighted.

CHAPTER TWO provides a general background to the manner in which schools function according to an environmental education policy. It intends to provide an

overview of implementing environmental education policy in the school. This will serve as a base from which to examine the problem.

CHAPTER THREE describes the research design and methodology. The data collection and the research instrument will be described.

CHAPTER FOUR contains the interpretation of research findings.

CHAPTER FIVE includes recommendations based on the research conducted.

Finally references utilised in this study have been acknowledged in the reference list at the end of this dissertation.

1.8 CONCLUSION

The role of environmental education is to improve the quality of education in South African schools, by implementing a school environmental education policy. The school environmental education policy is a framework for schools to organise and manage their environmental activities. A school environmental education policy could provide a useful framework for stating intentions and principles and managing action plans for improving school-based environmental activities.

The aim of the research is to determine how effective the implementation of school environmental education policies is and how this can be improved upon.

CHAPTER TWO

EFFECTIVE IMPLEMENTATION OF SCHOOL ENVIRONMENTAL EDUCATION POLICIES

2.1 INTRODUCTION

The purpose of a school environmental education policy is to raise the learners' environmental awareness, to give opportunities for learners to develop their skills of research and enquiry across the curriculum, to encourage learners to believe that both individual and collective action on environmental issues can make a difference and effect change to solve environmental problems, thus giving the learners an opportunity to study the environment from more than one perspective and sometimes through a common theme (Palmer & Neal, 1994:125).

Planning for a coordinated approach to environmental education might be enhanced by a school policy which relates environmental education to the components of the whole curriculum, which includes consideration of the implications of ethnic diversity and ensures progression and continuity. Developing a school policy for environmental education is an important step because such a policy provides a rationale and framework for education, ideally involves all members of the school community in its formulation and commits them to it and communicates the schools intentions to everyone with an interest in the school (Gayford, 1991:99,105).

This chapter focuses on the need for a school environmental education policy to be effectively implemented in the school curriculum. The role of environmental education in developing the school environmental education policy in the school curriculum as well as international perspectives on this are also discussed.

2.2 THE NEED FOR AN EFFECTIVE SCHOOL ENVIRONMENTAL EDUCATION POLICY

The Department of Education has recognised that environmental awareness and responsibility is crucial for building a brighter future for all South Africans. The National Environmental Education Programme (NEEP) has therefore been established to stimulate more effective environmental learning through the National Curriculum Statements (2003:8). An important reason for linking environment and education in South Africa is that environmental education can contribute significantly to transformation and development. Citizens who are environmentally literate are able to make wiser decisions about the effects of development on their environment, they can work actively to reverse environmental degradation and they can manage and use the country's natural resources more wisely and democratically (The Teacher, 2002:14).

An increasing amount of emphasis is being placed on increasing learners' understanding of environmental issues, providing opportunities for learners to share their opinions and suggestions about the world they live in, inspiring learners to think globally and act locally. In South Africa, the White Paper on Education and Training (1995) sees the aim of environmental education as creating "environmentally literate and active citizens" who will "enjoy a decent quality of life through the sustainable use of resources." Environmentally literate citizens will be productive people. They will be able to make wiser decisions about the effects of development on their environment. These citizens would work actively to reverse environmental degradation, manage and use the country's natural resources more wisely and democratically Furthermore, the new curriculum recognizes the importance of environmental learning, stating that "The Environment" must be made integral in every learning area. Educators are often

overwhelmed by the new emphasis on environmental learning and do not know where to start (The Teacher, 2002:10).

A school environmental education policy is an excellent starting point as it can guide learners in solving environmental problems, as well as help them to understand how all living systems are connected and how historical events affect environmental issues. This policy would also teach them how to find and use information on the environment (South African National Parks, 2002:4).

A school environmental education policy should contribute to the arousal of learners' interest towards all living and non-living objects around them, to increase their power of observing things, sharing their experiences, taking decisions and thereby fostering and developing a positive attitude towards the environment. Inclusion of environmental education in the school curriculum will help learners to inculcate in themselves moral and spiritual values developed as aesthetic sense and create a consciousness for maintaining and protecting the environment. They will observe their environment from which they would be enabled to solve problems related to the environment which they face in their everyday life. In the classroom situation they would participate actively, which would arouse their curiosity and lead them to enquire more about their environment (Science Education International, 1998:16).

The school environmental education policy should contain provisions for easy access to information. It should spell out the mechanisms for obtaining and disseminating environmental education content and it should address the issue of co-ordination among the key players and how the easy flow of information can be facilitated (SADC, 1999:26).

A school environmental education policy should be based upon:

- Developing in young people an understanding of global interdependence and concern for the quality of the global environment.
- Involving learners in studies of local environments and actions to conserve local environments and /or to improve their quality.

- Building on the experiences, perceptions, feelings and existing knowledge of young people and helping them to explore questions, issues and problems which arise from their own understandings of their environmental rights and responsibilities.
- Helping young people to value their natural and cultural heritage and their interdependence with people and environments in other parts of the world.
- Developing in young people the personal knowledge, skills, and commitments which enable them to participate effectively in social action for environmental protection and improvement.
- Helping young people to develop a sense of place and identity from their experiences in and understanding of the environment (Gough , 1992:18).

2.3 SCHOOL ENVIRONMENTAL EDUCATION POLICY: AN INTERNATIONAL PERSPECTIVE

The initiatives by the IUCN (International Union for the Conservation of Natural Resources), UNEP (United Nations Environment Programmes) and others, led to the intergovernmental conference on environmental education at UNESCO (United Nations Educational, Scientific and Cultural Organisation) at Tbilisi in the USSR. This endeavour resulted in the twelve (12) Tbilisi principles of environmental education, which cover all levels of schooling as far as environmental education is concerned. Inclusion of environmental education in school systems became a topical issue and various organisations in most countries of the world made inputs to ensure that environmental education receives the proper attention it deserves. Reports, strategies and charters were prepared in support of the idea (Irwin 1990). By implementing school environmental education policies schools could integrate environment into the curriculum by having a common school environmental goal. The environmental education policies could provide clear frameworks around which environmental education could be organised to ensure that learners have an opportunity to be exposed to a wide variety of environmental education methods and processes.

The Tbilisi intergovernmental conference in the USSR in 1977, sparked interest in environmental education in many countries. South Africa is one of those countries. Of the many countries that have made notable progress in this regard, a few will be highlighted in this study.

2.3.1 ENVIRONMENTAL EDUCATION POLICIES IN THE UNITED KINGDOM

All schools in the United Kingdom should have a written policy for environmental education. Recommendation one of the United Kingdom's response to the education section of the World Conservation Strategy reads as follows:

"AIM: for all schools to have a written environmental education policy with specific reference to living resource issues".

PROPOSALS FOR ACTION: All schools should have a written policy for environmental education within the total curriculum policy of the school. This should include environmental education objectives and guidelines on how the school can achieve these objectives. All teachers should be involved in the formulation and implementation of the policy." (Conservation and Development Programme for the UK 1983).

The Scottish Environmental Education Council (SEEC) produced a framework for the production of a school environmental education policy. The policy document is divided into eight sections:

- Aims
- Objectives
- Methods and timing
- Content (Knowledge, understanding, skills and concepts).
- Resources and the organisation of resources
- Assessment, record keeping and evaluation
- The school as an environmental stimulus

- other matters

It is also specified that the environmental education policy must reflect the special nature of each school. Despite the different nature of each school, it is interesting to note that schools following an environmental approach have considerable similarities of spirit and purpose, as reflected in the attitudes of teachers and learners.

2.3.2 AUSTRALIAN INITIATIVES

Industry groups, community organisations, government agencies and interested parties played an important role in the development of environmental education in Australia. The National Conservation Strategy's (NCSA) goal is to encourage the practice of living resource conservation for sustainable development. The country's educational efforts, with regard to environmental education, contributed towards the establishment of the Bicentennial Australian Studies School Project (BASSP). In one of its bulletins, namely, "Education for the Australian environment", it emphasizes teaching about, in and for the environment. In this bulletin, environmental education is described as a cross curriculum approach that is useful to learners. Learners should develop a caring and committed attitude that will foster their desire and ability to act responsibly in the environment. Among its ten proposed national goals for schooling, the Australian Education Council included the need to develop in learners an understanding of, and concern for, balanced development in the global environment (Gough, 1992: 12-13).

The Bicentennial Australian Studies School Project defined environmental education as: "… an across the curriculum approach to learning that is useful to individuals, and groups in coming to understand the environment with the ultimate objective of developing, caring and committed attitudes that will foster the desire to act responsibly in the environment which is used by the schools as they do not have a school environmental education policy in their possession. Thus, environmental education is concerned about knowledge and also feelings, attitudes, skills and social action" (Fien, 1988:10). Achieving these goals and objectives involves the integration of three approaches to environmental education –education in the environment, education about the environment and education for the environment.

2.3.2.1 Education in the Environment

The experience in the environment be it in a city street, a beach, a park, a farm, a forest or the school grounds, could be used to give reality, relevance and practical experience to learning. An increased awareness of aspects of the environment could be experienced from any opportunities for direct contact with the environment. The opportunities to learn out-of doors could also be used to develop important skills for data gathering, such as observation, sketching, photography, interviewing and using scientific instruments, as well as social skills such as group work, co-operation and aesthetic appreciation. Environmental awareness and concern could also be fostered by linking learning to direct experiences in the environment and allowing learners to become captivated by the complexity and wonder of natural systems or immersed in the values conflict over particular environmental issues (Fien, 1988:11).

2.3.2.2 Education about the Environment

The educational goal is to live responsibly and sustainably in the environment. The need for appropriate behaviour patterns and actions is essential for learners to understand how natural systems work and the impact of human activities upon them. This would include learning about political, philosophical, economic and socio-cultural factors as well as about the ecological ones that influence decisions about how to use the environment responsibly (Fien, 1988:11).

2.3.2.3 Education for the Environment

This approach aims to promote a willingness and ability to adopt compatiblity with the wise use of environmental resources. In so doing, it builds on education in and about the environment to help develop an informed concern and sense of responsibility for the environment through the development of an ethic and the motivation and skills necessary to participate in environmental improvement (Fien, 1988:11).

Fien (1997:16), a renowned Australian Environmental education expert, insists the environmental education policy should be a product of curriculum inquiry at the individual school level, that is, meso level. This view is supported by Gough (1987) and Robottom (1987). All these environmentalists contend that centrally developed policies on environmental education should foreclose debate over the nature, goals and practices of environmental education.

2.3.3 SWEDISH INITIATIVES

In Sweden, according to the government and the educational sector, they do care for the environment and its sustainability. The Unesco/Unep Environmental Education Conference held at Tbilisi, USSR in 1997, stimulated curricular initiatives in Sweden and surrounding countries. Sweden has a sophisticated and wide-ranging environmental monitoring service. It is therefore not surprising that their Environmental Protection Act of 1969 gives the country boards power to force companies to monitor the impacts of their environmentally hazardous activities (Martin, Lewis, Tumman, Smith and Brown, 1993:221,222).

Sweden's environmental policy, as set out in the Swedish Government Bill 1990/91, states that they aim … "to protect human health, maintain biological diversity, manage natural resources to ensure long term use and preserve both the natural and cultural landscapes." The Bill also stresses the importance of education in …enabling environmental awareness to permeate all types of activities" (Martin,et al: 1993:226).

The government's concern about the environment is reflected in its education system. Environmental issues are integrated into the education system at all levels of schooling. Given the fact that environmental issues feature prominently in secondary schools, it became critical that environmental education be infused into teacher education programmes. Public schools in Sweden teach environmental education by infusing it into Biological Sciences, and to a lesser extent into Social Studies. Upper secondary schools develop environmental awareness, understanding and practical skills through environmentally related issues. The Swedish education ministry increasingly

emphasise environmental issues in all sectors of the formal and informal educational system. It is encouraging that in the curriculum for initial teacher training Sweden adopts a dominant environmental dimension. Environmental education is a compulsory component for teacher training in the curriculum. The environmental education programmes include the development of skills (critical thinking, problem solving, evaluation and action), social and educational processes (community involvement, action research and local studies). The study of environmental ethics, environmental issues and processes are also included in the learning programmes (Martin, et al: 1993:226).

2.3.4 BOTSWANA INITIATIVES

The Botswana Kalahari Conservation Society's main aim is environmental education and the country's policy enables the Botswana people to develop, through appropriate education, a national sense of environmental awareness, which is behaviourally affective in conservation terms, and which satisfies the identified needs of the country (Hancock, 1989:3).

It is Botswana's intention to infuse environmental education into the curriculum. This is evident from their policy which speaks of appropriate education. When strategising important questions were raised, that is, regarding(who), target groups(what), environmental issues, and (how) communication of information. These three questions are critical, for facilitating the structure of the curriculum framework. School practitioners should be able to answer these questions, with environmental issues being a priority in an environment friendly curriculum framework. Attempts in Botswana target decision-markers at central and local government levels, but most importantly, teachers and learners at secondary and primary schools. This makes it critical that teacher education should cater for environmental education, especially in the foundation phase. In this country natural history is not emphasized as in most other African countries. It should also be noted that decision makers in Botswana, such as members of Parliament, Cabinet Ministers, and traditional chiefs are constantly informed about environmental issues. The general public is conscientised by posters, newspaper articles and radio broadcasts (Hancock, 1989:4).

At school level, Botswana has an interesting system of environmental awareness amongst the learners and practitioners. Their Wildlife Clubs and Outreach Programmes involve learners and teachers at both secondary and primary schools. At the secondary level film/slide shows, publications, field observations and discussions are the order of the day. At primary level the Kalahari Conservation Society has a multi-media education programme aimed at learners and educators. The Curriculum Development Unit of the Ministry of Education plays a significant role in ensuring the success of this venture. It basically amounts to the exchange of information which, when functionally utilized, could result in formation of a useful and comprehensive environmental education curriculum framework. The Tbilisi conference of 1977 sparked the development of environmental education. It was brought to the forefront of educational discourse; which resulted in various countries of the world taking serious note of it. It is therefore understandable that countries put mechanisms and strategies in place to facilitate the methodical infusion of environmental education into their educational systems. Flowing from this, there was consensus that environmental issues are critical for human survival and the sustainability of the environment. A holistic view of the environment emerges and biodiversity receives sufficient attention (Hancock, 1989:5).

2.4 SCHOOL ENVIRONMENTAL EDUCATION POLICY: A SOUTH AFRICAN PERSPECTIVE

In South Africa the official School Resource Pack which is sanctioned by the Department of Education is used by some schools. The school environmental education policy is a framework for schools to organise and manage their environmental activities, organize recycling campaigns, discuss different situations illustrating cause and effect, for example, water wastage. The learners can participate in decision-making about these environmental issues. An environmental education policy provides a useful framework for stating intentions, principles and managing action plans for improving school-based environmental activities (School Resource Pack, 1999:1).

The Eco-School programme encourages schools to become more environmentally literate, in other words, to develop a high level of knowledge and understanding about the environment and environmental issues. It also encourages schools to take action to improve the environment by developing wide range of skills in all learning areas. Through the Eco-School programme schools could specifically clarify environmental learning opportunities in the curriculum. As educators plan for their learning programmes, they should look for opportunities which relate learning outcomes to real environmental issues in the school and community. This would reflect in their school environmental education policies how they intend to promote better environmental learning and environmental management in their schools (Eco-School Pack, 2004:3).

Through the development of an environmental education policy schools can:

- Integrate environment into the curriculum.
- Manage school resources more wisely.
- Provide a clear framework around which environment education can be organised.
- Provide a source of contextual/relevant teaching opportunities around the issues eventually identified.
- Allow for forward planning.
- Use each environmental day for a thorough investigation of the issues associated with it.
- Proceed to action, an important part of environmental education.
- Expose learners to a wide variety of environmental methods and processes (School Resource Pack, 1999:1).

The environmental education policy statement is the statement of goal/s for the environmental issues identified. In essence it says who, at a particular school, has decided what is going to be addressed as well as when and how. Developing school environmental education policies could contribute to an enriching, happy, healthy and more sustainable environment (School Resource Pack, 1999:1). By using these policies a school community could make a tangible contribution to better environmental

management. In formulating school environmental education policies the following process is involved:

- Appointing an environmental education coordinator.
- Convening an environmental working group.
- Auditing teams examining the curriculum and key policy elements.
- Drafting a policy statement and action plans for school concerns.
- Introducing key elements of environmental education policies into school life.
- Evaluating and reviewing policy and action plans (School Resource Pack, 1999:2).

2.4.1 APPOINTING AN ENVIRONMENTAL EDUCATION COORDINATOR

Ideally, an enthusiastic teacher should be tasked with the policy development process. Policy development is not a one-off task but a continuing process that will shape a school environmental programme that has educational and community relevance. The coordinator should work closely with the school principal and management body and convene a team to do the job with speed, wide community consultation and efficiency (School Resource Pack, 1999:2).

2.4.2 CONVENING AN ENVIRONMENTAL WORKING GROUP

Community participation is essential for the development and effective implementation of the successful environmental education policies in schools. The committee could consist of teachers, the school management body, parents and learners. Without the support of parents and the community, school environmental education policies are likely to be little more than paper ideals and teaching staff would be severely taxed to deliver on action plans. Learner involvement is equally important to make the policy development a successful community endeavour (School Resource Pack, 1999:2).

2.4.3 AUDITING TEAM EXAMINING THE CURRICULUM AND KEY POLICY ELEMENTS

The key elements should be examined (audited) at a meeting. Once the initial meeting has taken place and key audit concerns are selected, smaller working groups should be formed to conduct an audit, draft policy statements and propose action plans. Priorities should be set with clear policy statements and realistic action plans (School Resource Pack, 1999:2).

2.4.4 DRAFTING A POLICY STATEMENT AND ACTION PLANS FOR SCHOOL CONCERNS

The environmental education coordinator gathers resources for the policies and updates it as the process develops. This maintains a 'living' policy with action plans that reflect the needs and priorities of the community. The policies could be reviewed every term. A public launch of the school environmental education policies should be undertaken on a special environmental day such as Arbor Day (School Resource Pack, 1999:3).

2.4.5 INTRODUCING KEY ELEMENTS OF ENVIRONMENTAL EDUCATION POLICIES INTO SCHOOL LIFE

The school environmental education policies should have measurable targets. The policies should be introduced in one phase at a time throughout the school year. Learners should be involved in targets such as reducing litter. The environmental education policy could function at the centre of school life, contributing to improve teaching and learning, economic sustainability and the overall quality of life of the community (School Resource Pack, 1999:3).

2.4.6 EVALUATING AND REVIEWING POLICY AND ACTION PLANS

The evaluations of school environmental education policies are essential. Fig. 1 could be used to review progress according to the different key elements listed in the diagram. The achievements should be shared with parents and the school community. A report on policy developments could be given in the local media, school magazine, EEASA Bulletin, at prizegivings or a school function. It is important to revise the policies and

it is useful to write into the policies when and how evaluation will take place, for example, at the beginning of each term, or at the end of the year (School Resource Pack, 1999:3).

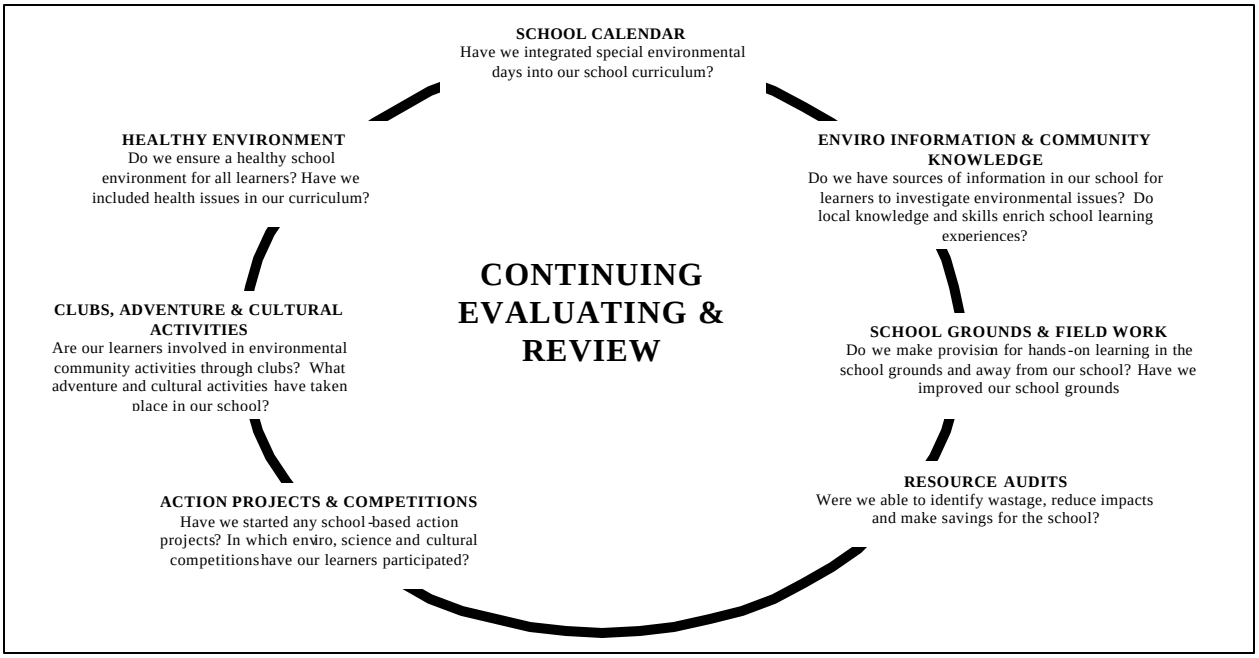

FIG. 1 Continuing Evaluating and Review (School Resource Pack, 2000:3).

2.5 INFUSION OF ENVIRONMENTAL EDUCATION INTO FORMAL EDUCATION CURRICULA IN SOUTH AFRICA

In South Africa environmental education had always been broadly conceived. It is the interaction of social, political and economic dimensions with a biophysical support base (White Paper on Environment Education, 1989; O` Donoghue, 1993). Since the 1980s, the environmental community struggled to have environmental education included in the school curriculum. Only in 1997, it was accepted as part of the General Education and Training band (C2005). Thus as Mosidi (1998, cited in Janse van Rensburg, 1998:2) argues, "…it would be strategically inappropriate to replace one concept

(social, political, economic) with another, given the extensive groundwork to gain governmental support for environmental education…"

The Council for the environment was established on 7 July 1982 in terms of the Environment Conservation Act, 1982 (Act 100 0f 1982), and was later reconstituted in terms of the Environment Conservation Act, 1989 (Act 73 of 1989) (Council for the Environment, 1991). The greatest contribution of the Council for the infusion of environmental education into the school curriculum was the White Paper on environmental education (Ballantyne & Oelofse, 1989), published in 1989. The international trends and thinking of that time influenced the Council to develop policies to govern environmental education. The White Paper (policy) thus incorporated the fundamental principles as outlined in Tbilisi conference. This was reflected in statements in the policy document, such as: "being a continuous lifelong process; being interdisciplinary; involving active participation of learners; and considering the environment in its totality" (White Paper on Environmental Education, 1989).

With the transformation and restructuring of education policies, environmental education gained much through the Environmental Education Policy Initiative. The initiative influenced the Reconstruction and Development Programme (RDP) policy process which includes a clause relating to environmental education, which reads as follows: "…strategies should include; environmental education programmes to rekindle our people's love for land, and to increase environmental consciousness among the youth …" (African National Congress, 1994:40).

When environmental education formed part of the department of education policy, the environmental education community established the environmental education curriculum initiative (EECI) to influence the curriculum development process and to assist with implementing the principles agreed upon in the white paper (EECI, 1996 & Mosidi, 1997). The EECI consisted of a group of volunteers who had no other vested interest in the curriculum development process except seeing environmental education forming part of formal education. It was a civil society-government alliance that was established to realize policy goals and to participate in the broad curriculum development process.

The EECI supported the department of Education in favour of a holistic and integrated approach for environmental education to be cross-curricular and interdisciplinary. The curriculum that was supported would have included environmental education as an integrated approach from grades 1 to 9 (general education and training phase), with specialization in grades 10 to 12 (further education and training). In the latter phase it would have formed part of environmental studies that would include study fields such as environmental economics, environmental management, primary health care, conservation, ecotourism and other related study fields (EECI, 1996).

The Revised National Curriculum Statement (RNCS) builds on the vision and values of South Africa's Constitution and Curriculum 2005. The first principle, of the RNCS is *Social Justice, a Healthy Environment, Human Rights and Inclusivity (C2005 RNCS, 2004*:4,5). Therefore in the new RNCS environmental education is integral (fundamental or essential) to every learning area. Several learning outcomes and assessment standards in each learning area involved learners in environmental education learning processes. It is important to explore what the various assessment standards involved in each learning area and what evidence of environmental education learning is required. In the RNCS, the assessment standards provide the conceptual progression in each learning area from grade to grade. Guided by these standards teachers, could develop more complex environmental education lesson plans for learners as they progress from grade to grade. The principle of integrated learning is also essential and ensures that learners experience the learning areas as linked and related. According to the RNCS, the ongoing development of teachers and school management teams is an important facet of the goal progression and integration (Eco-School Pack, 2004:3,4).

2.6 CURRICULUM DEVELOPMENT WITHIN AN OUTCOMES BASED EDUCATIONAL FRAMEWORK

Curriculum could be defined as the sum of all formal and informal teaching and learning experiences. All key elements, which form part of the schools environmental education policies, contribute to the school curriculum. In the original Curriculum 2005

'environment' is a cross-curricular phase organizer. This means that in any learning programme (for all phases and grades) environment could be a focus for learning. Developing school environmental education policies and management plans helped to 'get organized' to develop a range of learning programme units using environment as a phase organizer (School Resource Pack, 2000).

Environment could be a focus for learning in any learning programme. As Fig. 2 shows, the curriculum is at the heart of all work and could explore opportunities in each learning area that could be linked to various key elements, as seen in the blocks around the curriculum circle. The school curriculum is supported by the key elements used in the school's environmental education policies. A healthy school environment offers opportunities to good hygiene practices which could be included in the learning programmes for the learners. By including environmental days in the school curriculum learning programmes will be developed around environmental education issues. By auditing environmental information and community knowledge, a good foundation for curriculum activities will be developed. The learners could conduct an audit of the school's use of water, electricity and waste. They will be faced with the reality of what it costs to run a school, where the resources come from and what they can do to use them more wisely. Learners will gain valuable experience in environmental education through participating in clubs, adventures and cultural activities which could be linked to the curriculum. The school grounds provide many learning opportunities for the learners in environmental education. Fieldwork develops opportunities for learners to explore environmental education issues. Action projects and competitions in environmental education link closely to action taking and reporting of ideas which involve learners in active learning experiences (Eco-School Pack, 2004:6).

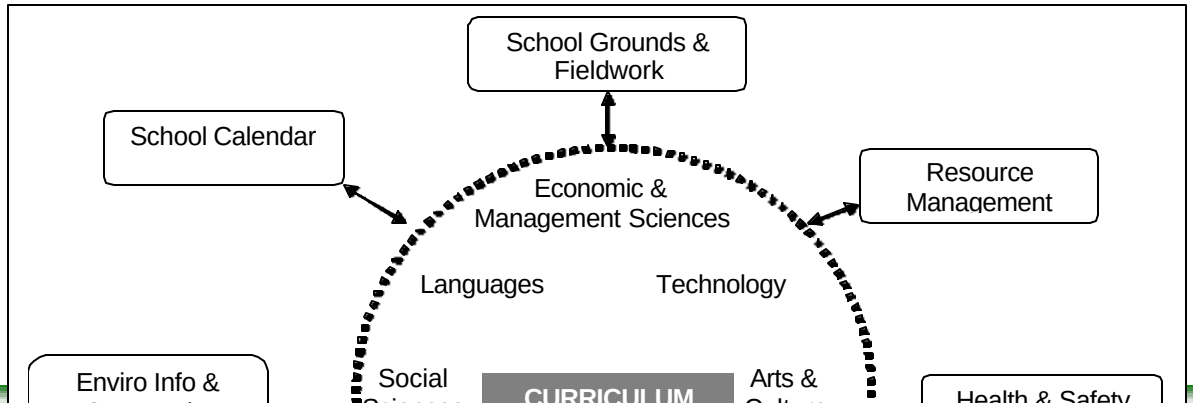

FIG. 2 : Environmental Learning Opportunities in the Curriculum: Eco-School Pack, (2004:6).

2.7 PLANNING FOR ACTIVE LEARNING THROUGH OUTCOMES BASED EDUCATION

In South Africa the Revised National Curriculum Statement has the following key components:

- Critical and developmental outcomes
- Specific outcomes (for eight learning areas)
- Phase organizers (which provide focus for clustering the specific outcomes and integrating the learning areas)
- Programme organizers (which provide focus for learning programme units)
- Assessment standards
- Learning programme units or illustrative learning programmes (these are the learning programme units that are developed at school level)

The Department of Education indicates that developing learning programmes is part of a school's curriculum development task. A school environmental education policy can help to develop the school's curriculum by contributing to:

- Macro planning/ School level planning – school planning for active learning through outcomes based education. At this stage the school decides on programme organizers and specific outcomes.
- Meso planning/ Phase level planning – phase team planning to determine assessment frameworks for active learning. At this stage phase teams

consider the scope and depth of the specific outcomes they have in mind for different programme organizers for the phase. They also decide how to assess the specific outcomes they have in mind for learning programme units.

- Micro planning/ Grade level planning – phase or classroom planning for active learning processes in integrated learning programme units. At this stage phase teams or individual classroom teacher's design active learning processes for selected learning programme units, with specific outcomes in mind. They also decide what evidence they will consider for assessment (School Resource Pack, 2000).

The Review Committee recommended that strengthening the curriculum required streamlining its design features and simplifying its language through the production of an amended National Curriculum Statement. It further recommended that this Revised National Curriculum Statement should reduce the curriculum design features from eight to three: critical and development outcomes, learning outcomes and assessment standards. It should also align curriculum and assessment. In addition, it recommended that implementation needed to be strengthened by improving teacher orientation and training, learning support materials and provincial support. It also recommended the relaxation of time-frames for implementation. The Revised National Curriculum Statement is thus not a new curriculum but a streamlining and strengthening of Curriculum 2005 and affirms the commitment to outcomes-based education (C2005 RNCS, 2004:2).

2.8 ENVIRONMENTAL EDUCATION IN THE SCHOOL CURRICULUM

An educational entitlement that empowers people to participate should not prescribe or manipulate the outcome of that educational process. It should give people the insights and understanding that enables them to make up their own minds about the way they utilize the environment (Martin, 1993:23).

In each case the individual's relationship with the environment is unique. It is for this reason that environmental education should not seek to dictate specific routes to concern and commitment. Instead it should present paths to understand the relationship between people and the environment in a way that not only recognizes, but also celebrates, the diversity of human experience. It should aim to open up routes that individuals could follow for themselves with help and encouragement. In this way the road to understanding becomes, in each case, the road to self-discovery, personal insight and commitment. Any practical elements should be clearly linked to personal relevance, significance and benefit (Martin, 1993:23).

Each learning area of the school curriculum focuses and explores different aspects of human understanding and experience. Each learning area could be mobilized to help young people develop their own coherent insight into human behavior and the environment. It should not require any new slots in the curriculum – merely a re-orientation of what is already common practice. Thus environmental education could be simply described as good education because it gives relevance to many different areas of the curriculum by providing a context to much of what is learnt. It gives breadth and balance by drawing on different views of our environment and encouraging learners to explore their own ideas and values as well as being aware of, and tolerant to, the views of others (Martin, 1993:23).

However, environmental education is more than a sum of the parts. The challenge is to develop each learning area of the curriculum so that it could play a part in the learner's environmental education, and also encourage schools to develop policies for delivering coherent, coordinated and progressive programmes of environmental education to all their learners (Martin, 1993:23)

2.9 INCORPORATING A SCHOOL ENVIRONMENTAL EDUCATION POLICY INTO THE CURRICULUM

The following four main policy options for environmental education in formal education can be adopted for various purposes and at various points within the curriculum:

- Environmental education as local, problem-solving curriculum action.

- Environmental education as an integrated approach to environmental education (an environmental perspective within separate learning areas).
- .Environmental education as a component within a learning area.
- Environmental education as a separate learning area (EEPI, 1995:4).

Given the diverse nature of South African society and our education system, different approaches to and views of knowledge need to be entertained, as do a diversity of ideological perspectives. In this regard, an orientation towards engaging with and seeking clarity on diverse perspectives is encouraged (Clacherty, 1995:3).

2.9.1 POLICY OPTION ONE: LOCAL, PROBLEM-SOLVING CURRICULUM ACTION

This option refers to a local, problem-solving, participatory approach to environmental education where direct curriculum linkages are made. It involves a team approach where real, local, environmental issues are focused on. These issues could be social or bio-physical and are an important means by which an integration of learning institution and community could be achieved and by which outside work can be drawn into classrooms, thereby influencing the curriculum itself (EEPI, 1995:4).

This approach involves:

- The identification of learning resources (including people) in the immediate environment of the learning institution.
- Enthusiastic and committed teachers as well as school management in sustaining an environmental ethos.
- Engaging teachers in action research towards continually improving curricula through first-hand involvement with the environment.

It is not possible to decree that such work shall take place. Often enough it depends on the enthusiasm of a resource person in a local context. Nevertheless, in schools where such work has been done major positive developments have been recorded. It is further noted that while this approach could be implemented across the entire range of educational levels, it has been found to be most effective at the senior level (intermediate phase), where learners have developed the necessary skills and where

the curriculum is still flexible enough to accommodate innovation (Clacherty, 1995:4).

2.9.2 POLICY OPTION TWO – INTEGRATION WITHIN LEARNING AREAS

All learning areas have a role to play in environmental education. Some learning areas spring more readily to mind as "environmental", for example, Natural Sciences and Social Sciences. All learning areas have a unique place in the curriculum and each one could make a different, yet complimentary contribution by incorporating an environmental perspective (EEPI, 1995:5).

There are eight learning areas in the Revised National Curriculum Statement. A learning area is a field of knowledge, skills and values, which has unique features as well as connections with other fields of knowledge and learning areas. In the Revised National Curriculum Statement, the learning areas are:

- Languages
- Mathematics
- Natural Sciences
- Technology
- Social Sciences
- Arts and Culture
- Life Orientation
- Economic and Management Sciences

(C2005 RNCS, 2004:4).

Environmental education should not be seen as a separate subject. It should permeate the curriculum as a "flavour" for everything that is done. As such it has the capacity to act as a change draw on the unique capacities of that subject to provide a better educational experience for each learner (Clacherty, 1995:6).

- ENVIRONMENTAL LEARNING IN LANGUAGES

At a very basic level, literacy is often the key to empowering people to take part in local decision-making. Exploring other people's response to the environment could enrich our own awareness of the relationships we have with the environment. It could also encourage tolerance of our concern for other people's views. The use of 'foreign' languages material is of particular interest as it brings an extra global dimension to the issues and could either demonstrate different perceptions or commonality of concerns (Martin, 1993:25).

For learners to be able to make sound judgements about an environmental issue, they would need to have a clear understanding of the language and concepts involved in an issue. Care should be taken not to trivialise the role of language in environmental education to a set of language-type exercises with an environmental theme, but rather to see the role of language as fundamental to developing the understanding and action competency skills needed to solve and prevent environmental problems and interact meaningfully with/in the environment. The environment provides the setting or context from which language expressions are made. Environmental education should thus not only provide the context for language use, but also the context for ongoing language development and understanding of environmental concerns (Janse van Rensburg & Lotz, 1998:16).

Languages are an important tool for achieving human rights and environmental justice. Through its assessment standards, the Languages learning area statement seeks to develop this tool to its fullest potential. Learners should become confident bilingual (or multilingual) speakers who have the critical tools to read their worlds and the texts spoken and written about it. They should be able to analyse these texts and rewrite them in ways that expand possibilities in relation to both human rights and environmental justice (C2005 RNCS, 2004:20).

Being able to listen, speak and read helps to explore environmental issues and risks. Environmental issues are often complex with many dimensions. Sometimes there is a need to take action for a better environment therefore to speak and write effectively is

important. There are four main ways in which the Languages learning area could support environmental learning:

- An environmental focus can provide the context for language development, for example, learners could write a poem about an environmental issue to practise their writing skills.
- At the same time the environmental focus raises awareness and develops values which address the cross-curricular principle, A Healthy Environment.
- Specific assessment standards in the home language of teaching and learning, involve concepts from other learning areas, for example, learners could write a report on an endangered species (Natural Sciences) or debate the concept of sustainable development (from Social Sciences).
- Environmental issues form a conscious part of the language learning process in some assessment standards, which require learners to be exposed to authentic use of language (for example, analyse an advertisement which indirectly promotes destruction of the environment) (Eco-School Pack, 2004:16).

- ENVIRONMENTAL LEARNING IN MATHEMATICS

Mathematics is important skill for action competency in solving, interpreting and preventing environmental problems. The ability to use mathematics in predictions and surveys could impact on calculations. The use of statistics provides up to date information on the state of the environment. Mathematical relationships are important to an understanding of social, political, and economic relations. The use of mathematical data in making responsible and informed decisions on environmental issues is also important in environmental education. In all sciences mathematical skills are utilised and, just as maths skills could help the scientist to analyse and evaluate, the environment can provide relevant and important areas of study for the development of mathematical skills. These should include the collection, analysis and presentation of numerical data, to help determine trends that could relate to crop yields, population and consumption levels or to the rate of loss of various environmental resources of habitats (Discussion Document, 1998:32).

According to the Revised National Curriculum the purpose of Mathematics is, amongst other aims, to develop in the learner a critical awareness of how mathematical relationships are used in social, environmental, cultural and economic relations. Learners need to develop skills of working with numbers, data, space and shape; solving problems; and investigating patterns and relationships. These skills are all necessary for exploring environmental issues and taking action. According to the Revised National Curriculum Statement for Mathematics learners need to be able to contribute responsibly to the reconstruction and development of society by using mathematical tools to expose inequality and assess environmental problems and risks (C2005 RNCS, 2004:18).

- ENVIRONMENTAL LEARNING IN NATURAL SCIENCES

The role of science, particularly the biological sciences, in environmental education is virtually self-evident. The variety of life, form and functions of living things, the carbon and water cycles, food chains and webs, are all central to environmental education. Fundamental to environmental education is an understanding of their importance to lives and livelihoods of people on a day-to-day level and the impact of human activity on these support systems. This could be related locally to health as well as food and water supplies and more 'globally' to the importance of maintaining bio-diversity for biotechnology, manufacturing and medicine. The environmental perspective provide as immediate relevance and contemporary importance to these essential parts of the science syllabus. Obviously there are also strong and important chemical components to environmental education. The chemical structure of the biosphere and the impact of chemical interference generated by human activity is central to understanding of environmental problems. Physics, plus design technology, can extend environmental education into areas that relate to the priorities and purpose of the use of scientific knowledge in its appropriateness to and impact on different environmental and social contexts (Martin, 1993:23).

- ENVIRONMENTAL LEARNING IN TECHNOLOGY

Environments are shaped by the human-environmental interactions with resources. The development of technologies have affected and changed human-environmental interactions significantly over time. This perspective on the interrelatedness of technology and environmental education goes beyond environmental awareness in technology programmes, but incorporates the use and application of technology in preventing environmental degradation and solving environmental problems. Issues-based methodologies and the emphasis of action competencies in environmental education and the problem solving orientation to technology shows a strong methodological link which emphasises the relationship between technology and environment (Janse van Rensburg & Lotz, 1998:28).

Technology could be described as the use of knowledge, skills and resources to meet people's needs and wants by developing practical solutions to problems, taking social and environmental factors into consideration. In Technology, the focus is on responsible technology for a healthy environment (Eco-School Pack, 2004:11).

- ENVIRONMENTAL LEARNING IN SOCIAL SCIENCES

Social Sciences support sustainable development in a healthy environment. The Social Sciences learning area studies the relationship between people and between people and the environment. These relationships vary and are influenced by social, political, economic and environmental contexts and by people's values, attitudes, and beliefs. Environmental education and human rights education are integral to this learning area (C2005 RNCS, 2004:149).

History and Geography are the key elements of this learning area:

- A study of history should enable learners to develop an understanding of the interpretation of heritage, of human and environmental rights, and of the impact of technology on society and the environment. The emphasis is on local studies and on the inclusion of lost voices and processes in history.
- A study of geography should enable learners to develop an understanding of people and places and an ability to participate in actions for sustainable development (C2005 RNCS, 2004:149).

This learning area should provide learners with a set of learning experiences which will enable them to explore and reflect critically on their society at a local, national and global scale so that they would become active participants in the transformation of their society at all levels. Understanding and reflecting critically on social systems, sustainable resource utilisation and management practises and citizenship would seem to be major focuses for learning programmes in this learning area (Discussion Document, 1998:16).

Understanding that environmental problems are not necessarily a manifestation of some contemporary malaise or even the fault of certain specified groups in society is also important. A historical perspective that explores the various forces that have had, over time, impact on current problems is therefore a vital facet of environmental education. Such an understanding provides greater insights into the root causes of environmental problems and gives a much better chance of defining effective solutions to current problems. Looking back at the course of history, we could also see that people 'create' history and that individual and random incidents have together caused change, for better or worse. This, together with understanding and the will to become involved, play an important part in re-defining the future (Martin, 1993:25).

- EVIRONMENTAL LEARNING IN ARTS AND CULTURE

The Foundation Phase Arts and Culture curriculum focuses on learners' own and local environment. The organising principles of the Intermediate Phase emphasises learners' interaction with natural, found and waste materials and they are required to do this with due regard to environmental concerns. In the Senior Phase, the organising principles cover national, African and global concerns. Learners should engage creatively and reflectively, through artistic activity and critical thinking, with human rights, heritage and nation building (Eco-School Pack, 2004:7).

The development of cultures over time has had a shaping effect on human-environmental interactions. Culture is dynamic and ever-changing. An understanding of the relationships between people and environments through changing cultures

creates a useful orienting framework for environmental education. Culture could be a broad orienting concept within environmental education programmes. Using the arts as methods for teaching environmental education in diverse, interactive ways helps to build action competence and explore concepts (Janse van Rensburg & Lotz, 1998:32).

We often cannot effectively explain, in scientific or factual terms, all the feelings that we have about the environment in which we live and work. However, the 'arts' whether music, writing or the graphic arts, are our means of realising and expressing subjective emotive reactions. A personal relationship with the environment, and an awareness of the effect of environmental stimuli on the senses, can be the most persuasive reason for people becoming involved in action to improve (or not deplete) the quality of the environment. It is impossible for anyone to appreciate fully the precise feelings and cultural situations concerned are very different. However, an empathy with the feelings of the people affected by environmental issues. Through drama and role play, however, it is possible to explore and vicariously experience the feelings that would be engendered by a particular solution. It is also possible, through drama, to explore the very complex sets of values and vested interests that motivate the views and behaviour of people involved in the issues (Martin, 1993: 24).

- ENVIRONMENTAL LEARNING IN LIFE ORIENTATION

The rationale of Life Orientation aims to empower learners to live meaningful lives. If an environment is detrimental to the health and well being of people, they would not be able to live 'meaningful' lives. Issues of environmental health and environmental rights are thus central to this learning area. For this learning area to realise its aims an understanding of the environmental context of learning would be integral to the development of values, skills and understanding of self, relationships and social change and transformation. Skills such as relationship building are essential for developing the action competencies needed for sustainable living practices (Janse Van Rensburg & Lotz, 1998:22).

The Life Orientation learning area would enable learners to make informed, morally responsible and accountable decisions about their health and the environment, Learners

would be encouraged to acquire and practise life skills that would assist them to respond to challenges and to play an active and responsible role in the economy and in the society (C2005 RNCS, 2004:199).

Many social and personal problems are associated with lifestyle choices and high-risk behaviours. Sound health practices and an understanding of the relationship between health and environment, could improve the quality of life and well-being of learners (Eco-School Pack, 2004:23).

- ENVIRONMENTAL LEARNING IN ECONOMIC AND MANAGEMENT SCIENCES

Economic and Management Sciences deals with the efficient and effective use of different types of private, public or collective resources in satisfying people's needs or wants, while reflecting critically on the impact of resource exploitation on the environment and on people. This learning area aims to promote productivity, social justice and environmental sustainability. A healthy economy needs a healthy environment. By developing skills in managing the home and school environment better, learners would learn to manage their life and business activities responsibly and effectively. This learning area deals with the efficient, effective, responsible and sustainable use of different kinds of resources. It aims to develop in learners a concern for using resources wisely, in ways that do not impact on the environment. Learners are encouraged to distinguish between 'saving" and 'wasting' resources such as water and electricity (Eco-School Pack, 2004:9).

Resource utilisation, development and social justice are key concerns of both environmental education and the economic and management sciences in South Africa. The impact of economic activity on the environment and the interactions between social, economic political and biophysical environments are important to the economic and management sciences. Developing a critical understanding of the role which sustained economic growth plays in alleviating environmental issues such as poverty and unemployment would contribute to developing action competencies for

environmental education in South Africa context (Janse van Rensburg & Lotz, 1998:25).

2.9.3 POLICY OPTION THREE – SPECIALIST / DISTINCT COURSES

Alongside the above integration of an environmental perspective into the curriculum generally, there is also a place for specific environmental subjects within the curriculum. The following three are proposed:

- Environmental studies at Foundation Phase Level.
- Education for sustainable living at Intermediate Phase Level.
- Environmental studies at Senior Phase Level (EEPI, 1995:7).

2.9.4 POLICY OPTION FOUR – COMPONENTS WITHIN LEARNING AREAS

According to this option there should be specific environmental components in a range of learning areas. These components or modules should examine the environmental implications of what is being dealt with in those learning areas. For example, in Chemistry, sources of raw materials, by-products, chemical waste would be relevant. Social Sciences could include a component on the history of environmentalism as a social movement (Clacherty, 1995:11).

2.10 CONCLUSION

The process of developing and implementing school environmental education policies were highlighted in this chapter. The researcher focused on the international perspectives as well as a South African perspective of implementing school environmental education policies. In developing the school environmental educational policies, the process of achieving it, is more important than the product itself. It is an educational process in itself.

The four policy options that were presented in this chapter should be seen as complimentary to each other, rather than individual possibilities for environmental education. Nor should they be seen as the only way to do things. These policy options were presented to support practice and to promote curriculum development in environmental education, through the effective implementation of the school environmental education policies (EEPI, 1995:1).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The literature study in chapter two focused on the various aspects of a school environmental education policy. In this chapter the research design and methodology will be outlined. The research design focuses on the following aspects:

- The purpose of quantitative and qualitative research.
- The design of the questionnaire as a research instrument.
- A discussion of the selected questions used by the researcher.
- A motivation for selection of the respondents used.

The research design will emphasise the merits in quantitative research as far as the data collection, recording procedures and the instrument of research is concerned.

3.2 THE RESEARCH DESIGN

All research studies, whether historical, descriptive or experimental, need a plan or general design to direct inquiry about a problem question. The design is the master plan according to Hopkins and Antes (1990:112) of inquiry. It is the overall structure and includes:

- Background information, presentation of the question, and hypothesis.
- Building a theoretical framework.
- Selection of subjects or other sources of data.
- Explanation of how data will be collected.
- Explanation of how the data will be analysed.
- Explanation of how the results will be interpreted.

Mertens (1998:70) describes research design as answering the question: "Who gets what when?" It involves decisions about how many groups to have and how many times to administer the dependant variable with an eye to controlling threats to validity.

Vockell (1993:150-151) states that research design refers to the systematic scheduling of the times at which treatments are administered to subjects. Vockell (1993:150–151) believes that the research is an important component of the research process - of the process of establishing cause and effect relationships. He feels that by combining careful research design with appropriate measurement, analysis and reasoning, we can strengthen the validity of the conclusions we draw from our research efforts.

Erlandson, Harris, Skipper and Allen (1993:67) states that "design means planning for certain broad contingencies without however, indicating exactly what will be done in relation to each". The design of a study, according to Erlandson, et al. (1993:66), is usually not fully established before the study begins but emerges as data is collected, preliminary analysis is conducted, and the context becomes fully described. The design of study is the attempt of a researcher to give order to some set of phenomena so that they will make sense to the researcher and so that the researcher can make sense to others (Erlandson, et al. 1993:73).

For the purpose of this research the quantitative approach will be used.

3.2.1 THE QUANTITATIVE RESEARCH METHOD

Quantitative research refers to the collection of data where the aim is to gather information that can be counted or measured in some form or another (Verma & Mallick 1999:26).

Quantitative research always seeks to reduce data to numbers that represent a single criterion (Erlandson, et al. 1993:38). Many authors classify data as qualitative or quantitative (Eichelberger, 1989:101). The essential difference between the two is that quantitative data is numerical (concerned with quantity), whereas qualitative data is non-numerical (concerned with quality or meaning).

Miles and Huberman (1994:10) are very explicit that quantitative data is useful when one needs to supplement, validate, explain, illuminate or re-interpret data gathered from the same setting. One major feature of quantitative research is that it focuses on naturally occurring, ordinary events in a natural setting so that one could have a strong indication of what "real life" is like.

Quantitative research according to Verma and Mallick (1999:26) is concerned with the acquisition and interpretation of data which can be presented in the form of discrete units that can be compared with other units by using statistical techniques. Mertens (1998:3) defines the quantitative method of research that measures variables in a quantifiable way. Quantitative data as described by Eichelberger (1989:101) is said to be objective.

Borg, Gall and Gall (1993:194-195) further clarifies that "the purpose of quantitative research is to make objective descriptions of a limited set of phenomena and also to determine whether the phenomena can be controlled through certain interventions".

The quantitative approach is not only useful but may be considered indispensable in most types of research. It has played an essential role in the history and development of science as it progressed from pure philosophical speculation to modern empirical verifiable observation (Best & Kahn, 1986:147).

In the quantitative research approach objectivity is the goal. It is important to keep all personal values, beliefs and biases from influencing the data collection and analysis process.

3.2.2 DATA COLLECTION

Information about people and things is acquired through collecting data. Data collection is the vehicle through which researchers collect information to answer their research questions and defend their conclusions and recommendations based on the findings

from the research (Mertens, 1998:285). The collection of data allows researchers to anchor what they wish to discuss in the empirical world.

Knowledge comes to us from many sources, personal experience, intuition, tradition, authorities and science. Of these, according to Krathwohl (1993:50), only the reasoning authority routinely seeks and survives testing and challenge. The other will have trouble handling the challenge that result from unusual findings and assertions.

In the natural process of science, knowledge is routinely challenged and changed as it is superseded. Changes affect sciences' status as an important source of knowledge less than they do other sources. Replication, especially using other research methods and situations, is the ultimate way of validating a proposition (Krathwohl, 1993:51).

The researcher, according to Erlandson, et al. (1993:39), becomes the most significant instrument for data collection and analysis. The human instrument allows data to be collected and analysed in an interactive process. As soon as data is obtained, tentative meaning is applied to it. When new data is obtained the meaning is revised.

Educational researchers have developed many types of procedures for measuring human characteristics and behaviour (Borg, et al. 1993:110). Those used most often by educational researchers are observations, interviews, questionnaires, achievement tests and measures of personal characteristics (Eichelberger, 1989:130).

The primary purpose of gathering data is to gain the ability to construct reality in ways that are consistent and compatible with the construction of a settings inhabitant. Researchers use a variety of data collection instruments, depending on the aim of the research. For the purpose of this study a questionnaire will be used.

3.3 THE INSTRUMENT OF RESEARCH

The questionnaire is an often used observational device for collecting personal data and opinion (Hopkins, et al. 1990:258). It provides a way to collect personal information from subjects that may not be readily obtainable using other methods. Questionnaires

provide structured responses and must be carefully developed, and revised to obtain valid data (Krathwohl, 1993:387).

3.3.1 THE QUESTIONNAIRE AS A RESEARCH INSTRUMENT

Questionnaires, according to Tuckman (1972:196), are used by researchers to convert the information directly given by a person (subject) into data. By providing access to what is "inside a persons head", make it possible to measure what a person knows (knowledge or information), what a person likes or dislikes (values and preferences), and what a person thinks (attitudes and beliefs). Eichelberger (1989:133) believes that developing and using questionnaires takes skill and experience. The two major concerns are that the research will contribute to knowledge and the data will be reliable and valid. To contribute to knowledge, the items in the questionnaire must address as comprehensively as possible the problems, or controversies, that are to be studied. This requires clear delineation of the underlying theories and the dimensions of the theories that past research has identified as important for this problem in this setting (Eichelberger, 1989:134).

Using questionnaires is a way of getting data about persons by asking them rather than watching them behave or by sampling a bit of their behaviour. The self report also presents certain problems as listed below (Tuckman, 1972:197):

- Respondents must co-operate when completing a questionnaire.
- Respondents must tell what is rather than what they think ought to be or what they think the researcher would like to hear.
- Respondents must know what they feel and think in order to report it.

Gay (1981:160) believes that as a general guideline, the questionnaire should be attractive, brief and easy to respond. Sloppy looking and lengthy questionnaires turn people off. This is not the way to get them to respond.

Gay (1981:160) feels that in order to meet this guideline, one must carefully plan both the content and the format of the questionnaire. No items should be included that do not directly relate to the objectives of the study, and structured, or closed-form items should be used if at all possible. A structured item consists of a question and a list of alternative responses from which the respondent selects. The list of alternatives should include all possible responses, and each possible response should be distinctly different from the rest.

The questionnaire has certain advantages, which were taken into account when it was selected as research instrument, namely:

- Cost considerations. The questionnaires could be hand delivered to respondents and collected.
- Questionnaires produce quick results, when it is not difficult to contact respondents.
- It is a convenient method of collecting data. Respondents can complete it in their own time.
- The assurance of anonymity is good.
- The questionnaire is ideal for a stable, consistent and uniform measure without variation.
- A wider coverage of issues is possible through the questionnaire (Maraj, 2000:192-193).

The following guidelines also listed by (Cox, 1996:9-12) were used during the compilation of the questionnaire:

- Use simple sentence construction.
- Avoid using uncommon terminology, jargon or words or phrases with ambiguous meaning.
- Avoid asking for respondent's opinion on a subject they cannot be expected to know anything about.
- Avoid using absolutes such as "every" or all, "always" or "never".
- Avoid using two qualifiers.

- Avoid writing compound question or phrases.

It addition, the following characteristics of a good questionnaire as cited by Best and Kahn (1986:175-176) were taken into consideration during the compilation of the questionnaire:

- It should deal with a significant topic, one that the respondents will recognize as important enough to warrant spending their time on.
- It should seek only that information which cannot be obtained from other sources.
- It should be as short as possible, and long enough to get the essential data.
- It should be attractive in appearance, neatly arranged, and clearly duplicated or printed.
- Directions for answering the questionnaire should be clear and complete.
- The questions should be objective, with no leading suggestions as to the responses desired.
- Questions should be presented in a good order, proceeding from general to more specific responses.
- Questions should be easy to tabulate and interpret.

Borg, Gall and Gall (1993:112) states that the questionnaire items could either be closed in which the question permits only certain responses (such as multiple-choice questions), or open in which individuals respond in their own words. The choice is determined by the objective of the particular question. Generally, though, it is desirable to design the questions in closed form so that the data can be quantified and analysed effectively.

For the purpose of this research some of the questions were closed-ended and some were open-ended. The researcher under the guidance of the supervisor and statistical consultant services at Unisa formulated questions around the aspects regarding the school environmental education policy.

The respondents had to make a choice according to a YES/NO scale, for example.

Does your school have a paper-recycling programme? **YES** ☐ **NO** ☐

Should the respondent reply in the negative, then he/she should put a tick (√) in the 'NO' column. Example of an open-ended question: "When planning learning programmes do educators sometimes use the school grounds to support learning activities? Explain very briefly". The design of the questionnaire will be explained next.

3.3.2 THE DESIGN OF THE QUESTIONNAIRE

The design of the empirical investigation was a structured questionnaire consisting of 37 closed and open-ended items. Based on the literature study undertaken by the researcher two key components were identified for the purpose of this empirical investigation. The two key components are:

- Developing a school environmental education policy to improve the school's educational and environmental performance.
- Implementation of the environmental education policy in school for a more sustainable environment.

The 37 questions were divided into different key elements. The key elements were school environmental education policy to ensure sustainable management, healthy environment, school grounds and fieldwork; resource management; clubs in the school environmental education policy; school calendar and the curriculum; action projects and competitions. These key elements contribute to the school curriculum by ensuring that 'environment' is integral to all learning areas; plan for more relevant learning opportunities using the local environment and to manage school resources more wisely. The key elements are also known as curriculum elements and are found in the Eco-School Toolkit which is obtainable from the organisation, Eco-Schools in Kwa-Zulu Natal. The toolkit consists of seven policy folders for each key/curriculum element. The questions for the questionnaire were formulated from the different policy folders of the key/curriculum elements. These elements are linked to the teaching and learning experiences of the school curriculum.

In the table 1 the variables in the questionnaire are grouped according to the curriculum elements.

A. ENVIRONMENTAL POLICY TO SUSTAINABLE MANAGEMENT

1. HAS YOUR SCHOOL DEVELOPED AN ENVIRONMENTAL EDUCATION POLICY USING THE ECO-SCHOOL TOOLKIT OR PACK?

2. IF YES, DO YOU EVALUATE THE IMPLEMENTATION OF THE KEY ELEMENTS (e.g. HEALTHY ENVIRONMENT) IN THE POLICY?
   IF YES, PLEASE STATE:
   HOW OFTEN? WHY?

B. SCHOOL GROUNDS AND FIELDWORK

3. ARE THERE PROCEDURES IN THE POLICY FOR EDUCATORS TO NETWORK WITH OTHER LOCAL SCHOOLS TO EXCHANGE ENVIRONMENTAL EDUCATION INFORMATION, IDEAS OR EXPERIENCES WITH REGARDS TO POLICY STATEMENTS (e.g. SCHOOL GROUNDS)

4. DOES YOUR SCHOOL'S ENVIRONMENTAL EDUCATION POLICY STIPULATE CLEARLY THE ACTION PLANS TO BE CARRIED OUT ?

5. DOES THE SCHOOL ENVIRONMENTAL EDUCATION POLICY PROMOTE THE USE OF THE SCHOOL GROUNDS IN CURRICULUM ACTIVITIES ?

6. WHEN PLANNING LEARNING PROGRAMMES DO EDUCATORS SOMETIMES USE THE SCHOOL GROUNDS TO SUPPORT LEARNING ACTIVITIES? EXPLAIN VERY BRIEFLY:

7. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY ENCOURAGE FIELD WORK?

8. DOES THE SCHOOL MANAGEMENT STRUCTURE SUPPORT THE FUNDING AND GENERAL PLANNING OF FIELD TRIPS ?

HOW?

C. RESOURCE MANAGEMENT

9. IS RECYCLING PROMOTED IN THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY?

10. DOES YOUR SCHOOL HAVE A PAPER RECYCLING PROGRAMME?

11. ARE EDUCATORS MADE AWARE OF WAYS TO MANAGE SCHOOL RESOURCES SUCH AS ELECTRICITY, WATER AND PAPER MORE WISELY?

12. ARE WASTE AND RECYCLABLE MATERIALS USED IN CLASSROOM ACTIVITIES?

D. HEALTHY ENVIRONMENT

13. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY SUPPORT THE IMPORTANCE OF WATER AT YOUR SCHOOL?

14. DOES YOUR SCHOOL HAVE ACCESS TO WATER-ON-TAP?

15. IS THE DRINKING WATER CLEAN FOR CONSUMPTION?

16. DOES YOUR SCHOOL HAVE TANKS TO COLLECT RAIN WATER?

17. ARE THERE ADEQUATE TOILETS FACILITIES FOR LEARNERS?

18. ARE THERE ADEQUATE TOILETS FACILITIES FOR EDUCATORS?

19. ARE THE TOILETS CLEAN & HYGIENIC AT ALL TIMES?

20. ARE HAND WASHING FACILITIES AVAILABLE?

E. SCHOOL ENVIRONMENT IN THE CURRICULUM

21. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY PROVIDE FOR ENVIRONMENTAL CALENDAR ACTIVITIES?

22. ARE THE FOLLOWING ENVIRONMENTAL DAYS CELEBRATED IN YOUR SCHOOL?
    - WORLD WETLANDS DAY
    - HUMAN RIGHTS DAY
    - WORLD HEALTH DAY

- EARTH DAY
- SOUTH AFRICAN FREEDOM DAY
- WORLD ENVIRONMENT DAY
- WORLD POPULATION DAY
- HERITAGE DAY
- WORLD TOURISM DAY
- WORLD FOOD DAY
- WORLD HABITAT DAY
- INTERNATIONAL DAY OF DISABLED PERSONS
- UNIVERSAL CHILDREN'S DAY
- WORLD AIDS DAY

23. ARE THE FOLLOWING ENVIRONMENTAL WEEKS CELEBRATED IN YOUR SCHOOL?
    - NATIONAL WATER WEEK
    - NATIONAL ENVIRONMENT WEEK
    - NATIONAL ARBOR WEEK
    - NATIONAL READATHON WEEK
    - NATIONAL MARINE WEEK
    - INTERNATIONAL WEEDBUSTER WEEK
    - DISARMAMENT WEEK

24. ARE ANY OF THESE CELEBRATIONS LINKED TO THE CURRICULUM ?
    IF YES: BRIEFLY EXPLAIN HOW?

25. ARE THERE ENVIRONMENTAL EDUCATION ACTIVITIES AT ALL LEVELS IN THE SCHOOL? (e.g. WATER WEEK)

26. ARE LEARNERS INVOLVED IN THE PLANNING OF THESE ACTIVITIES ?

F. ACTION PROJECTS AND COMPETITIONS

27. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY ENCOURAGE ACTION PROJECTS?

28. LIST ANY GROUP OR ORGANISATION YOUR SCHOOL IS AFFILIATED TO THAT SUPPORT LEARNERS IN PARTICIPATING IN ACTION PROJECTS
    - WESSA
    - ENVIROTECH
    - PAPER RECYCLING
    - COLLECT-A-CAN
    - SOUL BUDDYZ
    - EDU-PLANT

- ENVIRO 2000

29. DO LEARNERS IN YOUR SCHOOL PARTICIPATE IN ACTION PROJECTS IN THE FOLLOWING AREAS?
    - COMMUNITY GARDENING
    - WASTE REDUCTION AND RECYCLING
    - COMMUNITY OUTREACH :
    - CARE FOR THE AGED
    - CARE FOR THE ORPHANS
    - ANIMAL OR PLANT CONSERVATION
    - HABITAT PROTECTION OR RECLAMATION

30. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY MAKE PROVISION FOR COMPETITIONS?

31. DO LEARNERS IN YOUR SCHOOL PARTICIPATE IN COMPETITIONS IN THE FOLLOWING AREAS?

    - SCIENCE COMPETITIONS
    - ESSAY COMPETITIONS WITH AN ENVIRONMENTAL FOCUS
    - OLYMPIADS WITH AN ENVIRONMENTAL FOCUS
    - ENVIRO COMPETITIONS
    - CULTURE AND ART COMPETITIONS WITH AN ENVIRONMENTAL FOCUS
    - ENVIRO-QUIZ

G. CLUBS IN THE SCHOOL ENVIRONMENTAL EDUCATION POLICY

32. DOES THE SCHOOL HAVE ONE OR MORE CLUBS THAT FOCUS ON ENVIRONMENTAL ISSUES?

33. ARE LEARNERS INVOLVED IN THE CLUBS?

34. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY SUPPORT THE IMPORTANCE OF CLUBS IN SUPPORTING ENVIRONMENTAL LEARNING IN THE CURRICULUM?

35. ARE THE CLUB ACTIVITIES MAINLY:
    INFORMATION-BASED i.e. LEARNERS FIND OUT ABOUT SOMETHING
    ACTION-BASED i.e. LEARNERS TAKE ACTION IN RESPONSE TO AN ISSUE

36. DO CLUB ACTIVITIES LINK WITH THE SCHOOL CURRICULUM? IF YES, WRITE DOWN SOME OF THE WAYS THESE CURRICULUM LINKS ARE MADE?

37.	WOULD YOU LIKE TO ADD ANYTHING MORE WITH REGARDS TO THE SCHOOL ENVIRONMENTAL EDUCATION POLICY?

TABLE 1: Questionnaire with Variables Grouped According to the Curriculum Elements (Refer to Annexure 1 for Detailed Questionnaire)

These key elements with the variables will now be discussed.

A. ENVIRONMENTAL POLICY TO SUSTAINABLE MANAGEMENT

This element assists in the different aspects of developing and implementing a school environmental education policy and sustainable management plan to provide many opportunities for learners to be involved in active learning experiences with an environmental focus.

B. SCHOOL GROUNDS AND FIELDWORK

The six variables in this element is a guideline to what provisions are made for hands-on learning in the school grounds and away from the school. Improving school grounds provide opportunities for the school to benefit directly from learning programmes. Similarly fieldwork develops opportunities for exploring relevant, local issues.

C. RESOURCE MANAGEMENT

The four variables would involve learners in an audit of the school's resource use such as water, electricity, paper thus exploring these issues in more detail and taking action for more sustainable management. Thus resources can be used wisely to save money and care for the environment.

D. HEALTHY ENVIRONMENT

These eight variables would ensure a healthy school environment for all learners by linking health, water and sanitation issues to the curriculum. Issues related to a healthy environment are often directly related to the daily lives of learners and educators, for instance the cholera crises and the HIV/AIDS pandemic.

E. SCHOOL ENVIRONMENT IN THE CURRICULUM

How can schools integrate special environmental days and weeks into the school curriculum activities? Through choosing special environmental days and weeks in the school calendar educators could develop learning programmes around environmental issues. With an Outcomes Based curriculum framework, educators could develop cross-curricular learning programmes with a relevant environmental theme.

F. ACTION PROJECTS AND COMPETITIONS

Action projects and competitions contribute to better learning and more sustainable living. An active learning programme would often result in learners taking action to solve a local environmental problem or issue. An action project is a possible response to the identification of an issue. If a school audit indicates the need for waste minimisation, a recycling action project should commence.

G. CLUBS IN THE CURRICULUM

Learners become involved in environmental and community outreach activities through clubs. Learners could develop action-competence through participating in clubs, adventure and cultural activities. These activities provide opportunities to develop skills such as the ability to work in groups, make decisions, manage finances, hold meetings and run projects.

3.4 THE RESEARCH GROUP

The research was conducted in 151 schools in the Gauteng Department of Education (GDE) in Gauteng West, District Two. The GDE schools emanate from four ex-departments, viz. Ex-Transvaal Education Department (Ex-TED), Ex-Department of Education and Training (Ex-DET), EX-House of Representative (Ex-HOR), and Ex-House of Delegates (Ex-HOD).

The milieu, ethos, managerial styles and culture of teaching and learning vary considerably in schools in this district. They were 99 primary, 36 secondary and 16 independent schools. The primary and secondary schools consisted of learners from the community as well as surrounding area. The independent schools consist of both primary and secondary levels of education (grades one to twelve) which cater for

learners with special learning needs, such as religious instruction, barriers to learning and the medium of instruction. A variety of 99 primary schools, 36 secondary schools and 16 independent schools were deliberately chosen to get a complete picture of what was happening in schools in terms of the school environmental education policies.

It was considered important to do research in both primary and secondary schools because environmental education should be incorporated as part of education and training at all levels. It also serves to see the comparison of the implementation of the school environmental education policy in both primary and secondary schools. Therefore, the diverse background variety offered great fields of investigation as the learners at these schools were from a variety of multi-cultural backgrounds. Some of these schools cater for learners from disadvantaged socio-economic backgrounds, which must receive additional attention regarding inclusivity within the school curriculum. These hindrances obviously lead to consequences in their outlook regarding the environment. Learners who do not have the disadvantage of 'mother-tongue' not being their medium of instruction have a different 'making meaning' concept of the environment as well. The different methods used in teaching and learning in these schools have an impressionable impact on the educators and learners' environmental background. Therefore, these schools could be compared regarding their progress in environmental education and how they interact with the challenges of the implementation of their environmental education policy.

Within independent schools, where learners receive more individual attention, due to lesser numbers of learners per class, learners tend to be more pro-active and one should then also receive a more positive outlook. Religion obviously plays a big role as one's customs and cultures are the roots for many an outlook regarding the environment. Obviously, with regards to schools where there's a more equitable approach and educators' impact are more visible, learners would also represent another type of outlook.

The diversity of cultures, customs, background history, socio-economic situations can never be underestimated as it has a far-reaching impact on how learners regard their

environment. The more diverse the field of research, the more accurate the picture of findings would and could be presented.

Developing a school environmental education policy can be very challenging for some schools. By networking with other schools this challenge can be easily overcome. This can only be possible if the schools are in the surrounding area and belong to the same district. Therefore, these schools were chosen as they network with each other to maintain an awareness of what takes place in environmental education and keep a close ongoing contact with regards to the school environment policy.

Once permission was granted by the Gauteng Department of Education as well as Gauteng West District – D2, the questionnaires were distributed to all 151 schools in District Two. These questionnaires were handed personally to all the principals by the school managers and collected after completion.

The principal was informed via a covering letter to identity one member on the staff whose main aim is to ensure that fellow colleagues, learners and local community are environmentally aware through the effective implementation of the school environmental education policy. One questionnaire per school was distributed.

Cooperation in most instances was excellent and thus enabled a good return of the questionnaires. Of the 151 questionnaires distributed, 67 were returned. The questionnaires were sent to the Statistical Consulting Services of UNISA where the data was transcribed and processed.

3.5 CONCLUSION

In this chapter the quantitative approach was chosen as the research method to ensure that personal biases and values do not influence the analysis of the results. The quantitative research method is deductive, in other words it tests theory. It allowed for reliable sources of examples from which data could be transcribed and processed. The design of the questionnaire was explained and a motivation was given why a certain school district was chosen to conduct the research.

CHAPTER FOUR

ANALYSIS AND INTERPRETATION OF DATA

4.1 INTRODUCTION

In this chapter the discussion will focus on the following:

- The validity and reliability of the research instrument;
- A comparison of the independent pairs by stating appropriate hypotheses and interpreting the statistical test involved; and
- A comparison of the independent groups containing three or more groups by stating the hypotheses and the analyzing of the appropriate statistical data.

It is essential to establish the reliability and validity of the research instrument used in the research.

4.2 RELIABILITY AND VALIDITY

In order to establish the reliability and validity of the research instrument it is necessary firstly, to clarify these concepts and secondly, to relate them to this research.

According to Jaeger (1990:378) reliability is considered as a measurement concept that represents the consistency with which an instrument measures a given performance or behaviour. A measurement instrument that is reliable will provide consistent results when a given individual is measured repeatedly under near - identical conditions.

Validity, on the other hand, is a measurement concept that is concerned with the degree to which a measurement instrument actually measures what it purports to measure. Validity is not absolute but depends on the context in which a measurement instrument is used and the inferences that are based on the results of measurement (Jaeger, 1990:384).

The validity of a test is of the utmost importance. A test is valid to the extent that it lives up to the claims that the researcher has made for it. The following two types of validity as defined by (Borg, Gall & Gall, 1993:120) are mentioned in this research:

- **Content validity:** A test has content validity to the extent that its items represent the content that the test is designed to measure.
- **Construct validity:** A test has construct validity to the extent that it can be shown to measure a particular hypothetical construct. Psychological concepts such as competency, intelligence, anxiety and creativity are considered hypothetical constructs because they are not directly observable, but rather are inferred on the basis of their observable effects on behaviour.

To ensure content validity, experts in the research field from the School of Education and the Statistical Consulting Services at UNISA reviewed the questionnaire to judge the relevancy of each item.

The construct validity of the instrument was investigated by means of factor analysis. According to Jaeger (1990:345), factor analysis is used extensively in research. It is particularly useful as a tool for examining the validity of tests or the measurement characteristics of attitude scales. Borg, Gall & Gall, et al (1993:269) define factor

analysis as a correlation technique that examines a large number of items and determines whether they cluster into a smaller number of underlying factors. The principle objective of factor analysis is to construct a smaller number of variables (called factors) that do a good job of conveying the information present in a larger number of variables.

A second order factor analysis recorded the thirty-six variables to seven factors. Ferguson and Takane (1989:526) point out that these factors are not new or different from the original variables, but are hypothetical variables different from analyzing those variables generated through direct measurement. This suggests that it would be appropriate to base statistical analysis on those factors and the original questionnaire variables.

The following are the names given to the seven factors, which were derived from the variables in the questionnaire:

- Factor A: School Environmental Education Policy to ensure sustainable management which consists of two variables.
- Factor B: School Grounds and fieldwork which consists of six variables.
- Factor C: Resource Management which consists of four variables.
- Factor D: Healthy Environment which consists of eight variables.
- Factor E: School Calendar and the curriculum which consists of six variables.
- Factor F: Action Projects and competition which consists of five variables.
- Factor G: Clubs in the school environmental education policy, which consists of five variables

4.3 ANALYSIS AND INTERPRETATION OF DATA

In this section the variables, which are grouped according to the seven factors, are discussed. These variables are associated with the effective implementation of the school environmental education policies discussed in chapter three.

4.3.1 FACTOR A – SCHOOL ENVIRONMENTAL EDUCATION POLICY TO ENSURE SUSTAINABLE MANAGEMENT

This factor consists of two variables:

VARIABLE 1: HAS YOUR SCHOOL DEVELOPED AN ENVIRONMENTAL EDUCATION POLICY USING THE ECO-SCHOOL TOOLKIT OR PACK?

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	24	35.82	24	35.82
2	43	64.18	67	100.00

In 35.82% of the schools, environmental education policies have been developed, whereas 67.18% of the schools do not possess such policies but do work with environmental issues. Schools with environmental education policies proved that many opportunities were provided for their learners to be involved in active learning experiences. Their learners could address environmental education issues in an accountable and responsible manner. These policies assisted them in developing a range of learning programmes with an environmental focus.

VARIABLE 2: IF YES, DO YOU EVALUATE THE IMPLEMENTATION OF THE KEY ELEMENTS (e.g. HEALTHY ENVIRONMENT) IN THE POLICY. IF YES, PLEASE STATE HOW OFTEN AND WHY?

V2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	20	29.85	20	29.85
2	47	70.15	67	100.00

The effective implementation of school environmental education policies were evaluated by 29.85% of schools. By evaluating their policies once per term or twice per year according to their school's environmental needs, indicates that this type of evaluation assists them in reporting on the development of the policies. They updated

challenges experienced and recorded progress made during the year. They also maintained and sustained projects that were environmentally related on a regular basis. Evaluation of the policies determined the strengths and weakness on environmental issues, developed eco-awareness and lastly identified new problem and solutions.

4.3.2 FACTOR B – SCHOOL GROUNDS AND FIELDWORK

This factor consists of six variables:

VARIABLE 3: ARE THERE PROCEDURES IN THE POLICY FOR EDUCATORS TO NETWORK WITH OTHER LOCAL SCHOOLS TO EXCHANGE ENVIRONMENTAL EDUCATION INFORMATION, IDEAS OR EXPERIENCES WITH REGARDS TO POLICY STATEMENTS (e.g. SCHOOL GROUNDS)

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	23	34.33	23	34.33
2	44	65.67	67	100.00

A mere 34.33% of the schools did network with other local schools to exchange environmental education information, ideas or experiences while 65.67% did not have any contact with other schools. Through networking schools offer support and assistance to each other in environmental education activities. They undertake similar environmental education projects whereby interacting and sharing useful ideas, experiences and resources. Networking allows educators and learners to gain valuable experiences in environmental education by working together.

VARIABLE 4: DOES YOUR SCHOOL'S ENVIRONMENTAL EDUCATION POLICY STIPULATE CLEARLY THE ACTION PLANS TO BE CARRIED OUT?

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	33	49.25	33	49.25
2	34	50.75	67	100.00

In 49.25% of the schools, the action plans in the school environmental education policies, were clearly stipulated and 50.75% of the schools did not have any clear action plans.

VARIABLE 5: DOES THE SCHOOL ENVIRONMENTAL EDUCATION POLICY PROMOTE THE USE OF THE SCHOOL GROUNDS IN CURRICULUM ACTIVITIES?

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	21	31.34	67	100.00
2	46	68.66	46	68.66

A positive response was shown by 68.66% of the schools. These schools used the school grounds in a number of different ways to provide many different environmental focus points around which active learning programmes could be developed, such as litter in school grounds and life in the school yard. Some of the ideas include the studying of the plant and animal life found in their school grounds. By improving the school grounds, specific projects could be undertaken on the school grounds to include an ecosystem pond or starting a vegetable garden or an indigenous garden. These projects would not only improve the school grounds but would also provide opportunities for active learning. Due to a shortage of ground space, 31.34% of the schools did not use their school grounds to develop projects such as a vegetable or an indigenous garden, an ecosystem pond or commence a recycling programme.

VARIABLE 6: WHEN PLANNING LEARNING PROGRAMMES DO EDUCATORS SOMETIMES USE THE SCHOOL GROUNDS TO SUPPORT LEARNING ACTIVITIES? EXPLAIN VERY BRIEFLY:

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	58	86.57	58	86.57
2	9	13.43	67	100.00

A high percentage of 86.57% indicated that educators used their school grounds to its maximum and 13.43% of the schools did not have enough ground space to use for their learning programmes. The school grounds contained many eco-systems, which related directly to the content being taught to the learners. These factors and other natural resources in the grounds helped in planning their learning programmes. Some of the schools conducted an audit on “Litter Hot Spots” on their school grounds, which resulted in them drawing a graph and suggesting a plan of action. Some of the schools collected various materials such as leaves, seeds, stones from their school grounds, which, were used for their lessons. Most of the schools used trees and plants on their school grounds for their Natural Sciences lessons, which was a hands-on experience for the learners.

VARIABLE 7: DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY ENCOURAGE FIELD WORK?

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	43	64.18	43	64.18
2	24	35.82	67	100.00

Studies that involved fieldwork offered the learners an opportunity to encounter real life experiences. This would stimulate dialogues and discussions among the learners. A positive response of 64.18% compared to the negative response of 35.82% received regarding fieldwork showed that it played an important role in providing opportunities for drawing on the environment as a stimulus to learning. First hand - experiences of different environmental issues were offered wherever possible which allowed their learners to develop a personal response to their environment and enabled them to gain awareness of these environmental issues. They organised well-planned excursions and field trips, which made the learners aware of other places of environmental importance.

VARIABLE 8: DOES THE SCHOOL MANAGEMENT STRUCTURE SUPPORT THE FUNDING AND GENERAL PLANNING OF FIELD TRIPS? HOW?

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	40	59.70	40	59.70
2	27	40.30	67	100.00

To ensure universal participation 59.70% of the schools funded those learners who could not afford to join in the trips. They were subsidised through fund raising by the School Governing Body and also received sponsorships and donations from Non-Government Organisations. Transport was provided by 40.30% of the schools for field trips or excursions.

4.3.3 FACTOR C – RESOURCE MANAGEMENT

There are four variables in this factor:

VARIABLE 9: IS RECYCLING PROMOTED IN THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY?

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	54	80.60	54	80.60
2	13	19.40	67	100.00

In 80.60% of the schools recycling was promoted while 19.40% of the schools had not recognised the importance of recycling. By promoting recycling in schools learners are involved in action research and problem-solving processes such as resource management. The reasons for recycling include the reduction of waste and litter, which is not only unsightly and unhealthy but also waste resources that can be used again – that is why it is called 'waste'. Without recycling more inputs are necessary to produce new products and these inputs are either precious (e.g. water or aluminium for cooldrink tins) or they create pollution (e.g. making new paper causes water and air pollution).

VARIABLE 10: DOES YOUR SCHOOL HAVE A PAPER RECYCLING PROGRAMME?

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	40	59.70	40	59.70
2	27	40.30	67	100.00

It was indicated that 59.70% of the schools ran a paper-recycling programme. These schools have saved by reducing, reusing and recycling resources such as paper. The 40.30% of the schools that had no paper-recycling programme deprived their learners the opportunity of reinforcing the sustainable use of resources.

VARIABLE 11: ARE EDUCATORS MADE AWARE OF WAYS TO MANAGE SCHOOL RESOURCES SUCH AS ELECTRICITY, WATER AND PAPER MORE WISELY?

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	61	91.04	61	91.04
2	6	8.96	67	100.00

A high percentage of 91.04% indicated that the school environmental education policies assisted educators to manage their resources more wisely. They saved money by reducing the cost of resources such as electricity and water. Only 8.96% indicated that they were unaware of the importance of saving resources.

VARIABLE 12: ARE WASTE AND RECYCLABLE MATERIALS USED IN CLASSROOM ACTIVITIES?

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	59	88.06	59	88.06
2	8	11.94	67	100.00

By reusing waste and recyclable materials in classroom activities, 88.06% of the schools promoted the reduction of these resources, whereas 11.94% of the schools did not encourage recyclable materials to be used in the classrooms.

4.3.4 FACTOR D - HEALTHY ENVIRONMENT

There are eight variables discussed in this factor:

VARIABLE 13: DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY SUPPORT THE IMPORTANCE OF WATER AT YOUR SCHOOL?

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	55	82.09	55	82.09
2	12	17.91	67	100.00

In this variable, 82.09% of the school's environmental education policies supported the principle of having a healthy environment while 17.91% apparently did not understand the importance of a healthy environment.

VARIABLE 14: DOES YOUR SCHOOL HAVE ACCESS TO WATER-ON-TAP?

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	64	95.52	64	95.52
2	3	4.48	67	100.00

Only 4.48% of the schools were situated in the rural areas, and had no water-on-tap, whereas 95.52% of the schools did have access to water-on-tap.

VARIABLE 15: IS THE DRINKING WATER CLEAN FOR CONSUMPTION?

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	64	95.52	64	95.52
2	3	4.48	67	100.00

The percentages are the same as in variable 14, which indicated that 95.52% had clean and good quality water for consumption due to the fact that these schools had water-on-tap and 4.48% of the schools did not have clean and good quality water as they had no water-on-tap. It is important for the learners to have access to clean and safe water so as to promote personal hygiene and to improve their learning ability. Non-access to clean water will have a negative impact on the learners such as the spread of cholera and preventing them from a clean and healthy school environment. It will also lead to poor sanitation. Learners need to be made aware that tap water and good sanitary facilities go hand-in-hand in ensuring good health.

VARIABLE 16: DOES YOUR SCHOOL HAVE TANKS TO COLLECT RAIN WATER?

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	9	13.43	9	13.43
2	58	86.57	67	100.00

Most of the schools, 86.57%, had no water tanks to collect rainwater, but 13.43% of the schools realised the importance of collecting rain water by using water tanks, which they could use on their school grounds.

VARIABLES 17: ARE THERE ADEQUATE TOILET FACILITIES FOR LEARNERS?

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	55	82.09	55	82.09
2	12	17.91	67	100.00

A high percentage of 82.09% proved that schools had adequate and well-maintained toilets for learners, while a low score of 17.91% indicated that some schools experienced problems in this area.

VARIABLE 18: ARE THERE ADEQUATE TOILET FACILITIES FOR EDUCATORS?

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	58	86.57	58	86.57
2	9	13.43	67	100.00

Educators in 86.57% of the schools were provided with adequate toilet facilities compared to 13.43% of the schools.

VARIABLE 19: ARE THE TOILETS CLEAN & HYGIENIC AT ALL TIMES?

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	60	89.55	60	89.55
2	7	10.45	67	100.00

The toilets in 89.55% of the schools are kept clean and hygienic at all times, while 10.45% of the schools could not maintain hygienic conditions.

VARIABLE 20: ARE HAND WASHING FACILITIES AVAILABLE?

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	64	95.52	64	95.52
2	3	4,48	67	100.00

In order to minimize the risk associated with inadequate sanitation, the high positive percentage of 95.52% in the above variable indicated that these schools had adequate and well-maintained hand washing facilities for learners as well as educators and only 4.48% of the schools encountered a problem in this area.

4.3.5 FACTOR E – SCHOOL CALENDAR AND THE CURRICULUM

This factor consists of six variables some of which have sub-sections:

VARIABLE 21: DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY PROVIDE FOR ENVIRONMENTAL CALENDER ACTIVITIES?

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	46	68.66	46	68.66
2	21	31.34	67	100.00

In 68.66% of the schools the learners were made environmentally conscious through the curriculum of the various environmental calendar activities, while this was not done in 31.34% of the schools.

VARIABLE 22: ARE THE FOLLOWING ENVIRONMENTAL DAYS CELEBRATED IN YOUR SCHOOL?

World Heritage Day

V22.1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	16	23.88	16	23.88
2	51	76.12	67	100.00

Human Rights Day

V22.2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	59	88.06	59	88.06
2	8	11.94	67	100.00

World Health Day

V22.3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	35	52.24	35	52.24
2	32	47.76	67	100.00

World Environment Day

V22.4	Frequency	Percent	Cumulative Frequency	Cumulative Percent

Heritage Day

V22.5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	61	91.04	61	91.04
2	6	8.96	67	100.00

World Habitat Day

V22.6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	30	44.78	30	44.78
2	37	55.22	67	100.00

International Day of Disabled Persons

V22.7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	24	35.82	24	35.82
2	43	64.18	67	100.00

Universal Children's Day

V22.8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	48	71.64	48	71.64
2	19	28.36	67	100.00

World Aids Day

V22.9	Frequency	Percent	Cumulative Frequency	Cumulative Percent

There are a number of special environmental days as indicated in variable 22. These special days will focus the attention of the learners and educators on the need to take care of their natural and cultural heritage, as well as human rights issues and environmental health issues. From the high percentages in variable 22 it was noted that majority of the special environmental days were observed and implemented in the curriculum. These special days draw the attention of the learners to human rights and responsibilities which would include the right to participate in action for a healthier environment.

VARIABLE 23: ARE THE FOLLOWING ENVIRONMENTAL WEEKS CELEBRATED IN YOUR SCHOOL?

National Water Week

V23.1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	50	74.63	50	74.63
2	17	25.37	67	100.00

National Environment Week

V23.2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	44	65.67	44	65.67
2	23	34.33	67	100.00

National Arbor Week

V23.3	Frequency	Percent	Cumulative Frequency	Cumulative Percent

National Readathon Week

V23.4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	49	73.13	49	73.13
2	18	26.87	67	100.00

National Marine Week

V23.5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	12	17.91	12	17.91
2	55	82.09	67	100.00

National Weedbuster Week

V23.6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	14.93	10	14.93
2	57	85.07	67	100.00

Disarmament Week

V23.7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	9	13.43	9	13.43
2	58	86.57	67	100.00

There are seven special environmental weeks mentioned in the above variable. The high percentages in the National Water Week (74.63%), National Environment Week (65.67%), National Arbor Week (92.54%), National Readathon Week (73.13%), indicated that these weeks were integrated into the school curriculum. The low percentages noted in the National Marine Week (17.91%), National Weedbuster Week (14.93%) and Disarmament Week (13.43%) indicated that schools did experience difficulty in linking these weeks to the school curriculum. These schools find difficulty in celebrating National Marine Week due to the fact that they are not situated in coastal areas.

VARIABLE 24: ARE ANY OF THESE CELEBRATIONS LINKED TO THE CURRICULUM? IF YES, BRIEFLY EXPLAIN HOW?

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	49	73.13	49	73.13
2	18	26.87	67	100.00

These special environmental days and environmental weeks are integrated into the school curriculum activities and learning areas. In 73.13% of the schools there are lesson programmes developed around these special days and special weeks while 26.87% of the schools experienced difficulty in linking these celebrations to their curriculum.

VARIABLE 25: ARE THERE ENVIRONMENTAL EDUCATION ACTIVITIES AT ALL LEVELS IN THE SCHOOL? (e.g. WATER WEEK)

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	52	77.61	52	77.61
2	15	22.39	67	100.00

In 77.61% of the schools 'Readathon' is used in conjunction with the 'Language' learning area, which helped to develop reading. Some of these schools integrated these special environmental days and weeks in their 'Assembly Talks' or took their learners on excursion /field trips or sometimes organised an educational show at their schools, for example, HIV/AIDS programme – "World Aids Day". In 22.39% of the schools environmental education activities in all grades were not encouraged.

VARIABLE 26: ARE LEARNERS INVOLVED IN THE PLANNING OF THESE ACTIVITIES?

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	38	56.72	38	56.72
2	29	43.28	67	100.00

While 56.72% of the schools involved their learners in the planning of the environmental education activities only 43.28% of the schools involved their educators.

4.3.6 FACTOR F – ACTION PROJECTS AND COMPETITIONS

This factor has five variables of which some have sub-sections:

VARIABLE 27: DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY ENCOURAGE ACTION PROJECTS?

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	38	56.72	38	56.72
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

In 56.72% of the schools, the development of the school environmental education policies had assisted the educators to integrate environment into the curriculum, by participating in action projects and competitions. These school – based action projects contributed to better learning and more sustainable living, while 43.28% of the schools allowed their learners to miss out on these learning opportunities. Action projects allow learners to achieve outcomes in the different learning areas, for example, managing the school's resources will enable learners to demonstrate managerial expertise and administrative proficiency and to use skills to improve relationships in family, group and community. Action projects involve learner participation which contributes to better learning and more sustainable living.

VARIABLE 28: LIST ANY GROUP OR ORGANISATION YOUR SCHOOL IS AFFILIATED TO THAT SUPPORT LEARNERS IN PARTICIPATING IN ACTION PROJECTS.

WESSA

V28.1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	4.48	3	4.48
2	64	95.52	67	100.00

Envirotech

V28.2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	5	7.46	5	7.46
2	62	92.54	67	100.00

Paper Recycling

V28.3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	33	49.25	33	49.25
2	34	50.75	67	100.00

Collect-a-Can

V28.4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	25	37.31	25	37.31
2	42	62.69	67	100.00

Soul Buddyz

V28.5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	15	22.39	15	22.39
2	52	77,61	67	100.00

Edu-Plant

V28.6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	14.93	10	14.93
2	57	85.07	67	100.00

Enviro 2000

V28.7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	8	11.94	8	11.94
2	59	88.06	67	100.00

According to variable 28, with low percentages ranging from 4.48% to 11.94% indicated that majority of the schools were not affiliated to any of the listed organisations which rendered support for learners to participate in action projects. The above organisations continuously involve learners from affiliated schools in various

learning projects. Learners are invited to participate in the learning programmes outlined according to the school curriculum. Various resources are made available to these schools which learners could use in the different learning areas.

VARIABLE 29: DO LEARNERS IN YOUR SCHOOL PARTICIPATE IN ACTION PROJECTS IN THE FOLLOWING AREAS?

Community Gardening

V29.1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	21	31.34	21	31.34
2	46	68.66	67	100.00

Waste Reduction and Recycling

V29.2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	38	56.72	38	56.72
2	29	43.28	67	100.00

Care for the Aged

V29.3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	27	40.30	27	40.30
2	40	59.70	67	100.00

Care for the Orphans

V29.4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	32	47.46	32	47.46
2	35	52.54	67	100.00

Animal or Plant Conservation

V29.5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	28	41.79	28	41.79
2	39	58.21	67	100.00

Habitat Protection or Reclamation

V29.6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	15	22.39	15	22.39
2	52	77.61	67	100.00

From the above percentages it is clear that the majority of the learners, (56.72%) participated in action projects, which encouraged waste reduction and recycling programmes, whereas in community gardening (31.34%), care for the aged (40.30%) care for orphans (47.46%), animal or plant conservation (41.79%), and habitat protection or reclamation (22.39%) had very low responses.

VARIABLE 30: DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY MAKE PROVISION FOR COMPETITIONS?

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	34	50.75	34	50.75
2	33	49.25	67	100.00

Approximately 50.75% of the schools entered their action projects into competitions, which made it easier for them to integrate competitions into the formal curriculum through the school environmental education policies.

VARIABLE 31: DO LEARNERS IN YOUR SCHOOL PARTICIPATE IN COMPETITIONS IN THE FOLLOWING AREAS?

Science Competitions

V31.1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	39	58.21	39	58.21
2	28	41.79	67	100.00

Olympiads with an Environmental Focus

V31.2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	23	34.33	23	34.33
2	44	65.67	67	100.00

Enviro Competitions

V31.3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	30	44.78	30	44.78
2	37	55.22	67	100.00

Culture and Art Competition with an Environmental Focus

V31.4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	43	64.18	43	64.18
2	24	35.82	67	100.00

Enviro-Quiz

V31.5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	14	20.90	14	20.90
2	53	79.10	67	100.00

While 58.21% of the schools provided opportunities whereby their learners participated in Science Competitions, 41.79% of the schools did not.

Culture and Art Competitions with an environmental focus played an important role in 64.18% of the schools.

The above competitions provided opportunities in which the learners shared their work, as well as ideas and learnt from others. In the remaining three areas namely, Olympiads with an Environmental Focus (34.33%), Enviro Competitions (44.78%) and Enviro-Quiz (20.90%) very few schools participated.

4.3.7 FACTOR G – CLUBS IN THE SCHOOL ENVIRONMENTAL EDUCATION POLICY

The last factor consists of five variables:

VARIABLE 32: DOES THE SCHOOL HAVE ONE OR MORE CLUBS THAT FOCUS ON ENVIRONMENTAL ISSUES?

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	25	37.31	25	37.31
2	42	62.69	67	100.00

Although clubs that focused on environmental issues existed in 37.31% of the schools, the majority 62.69% of the schools had apparently not realised the value of these clubs.

VARIABLE 33: ARE LEARNERS INVOLVED IN THE CLUBS?

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	22	32.84	22	32.84
2	45	67.16	67	100.00

Learners in 32.84% of the schools were involved in the clubs but 67.16% of the schools involved other stakeholders in their clubs. These learners became involved in environmental and community outreach activities through these clubs.

VARIABLE 34: DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY SUPPORT THE IMPORTANCE OF CLUBS IN SUPPORTING ENVIRONMENTAL LEARNING IN THE CURRICULUM?

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	30	44.78	30	44.78
2	37	55.22	67	100.00

In 44.78% of the schools club activities were included in their learning programmes and not as extra-curricular activities while 55.22% of the schools did not support the importance of club activities. Most learners are active members of clubs to improve their school and community environment. In addition to taking action to solve environmental problems, an environmental club is an opportunity to meet interested members from other schools who want to be involved in caring for the Earth.

VARIABLE 35: ARE THE CLUB ACTIVITIES MAINLY:
INFORMATION-BASED i.e. LEARNERS FIND OUT ABOUT SOMETHING

ACTION-BASED i.e. LEARNERS TAKE ACTION IN RESPONSE TO AN ISSUE

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	32	47.76	32	47.76
2	35	52.24	67	100.00

The educators in 47.76% of the schools worked with the clubs during school hours to develop club projects and thus achieved the learning outcomes with the learners. The educators in 52.24% of the schools found difficulty to incorporate working with club projects in their school curriculum.

VARIABLE 36: DO CLUB ACTIVITIES LINK WITH THE SCHOOL CURRICULUM? IF YES, WRITE DOWN SOME OF THE WAYS THESE CURRICULUM LINKS ARE MADE?

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	28	41.79	28	41.79
2	39	58.21	67	100.00

Provision for cultural activities like folk/ traditional dancing, singing and craft making were made by 41.79% of the schools and by including stories and story telling it could lead to valuable learning opportunities. Activities such as these greatly enriched the school life of the learners. In some of these schools learners were encouraged to use references provided by 'Clubs' Material' for example, Soul Buddyz, in different learning areas. Their learners related better and were happier to work with material in the classroom, which they could relate to, while 58.21% of the schools did not link club activities to the school curriculum.

4.4 OBSERVATIONS AND FINDINGS

The findings and observations are based on the results of the variables discussed in 4.3, Analysis and Interpretation of the Data.

From the first factor titled, 'School Environmental Education Policy to ensure Sustainable Management' it was quite evident that educators required assistance and guidance with regards to the appropriate development and effective implementation of school environmental education policies. Presently, educators who are the main providers of learning need to be involved in the development and implementation of the school environmental education policies. Some of the schools had environmental education policies in place so as to improve their educational and environmental performance.

Regarding the second factor titled, 'School Grounds and Fieldwork' the schools with the highest percentages indicated that their local school grounds and local environment were important resources which provided many learning opportunities for their learners. There were some schools that identified possible places for exploring environmental issues beyond the school grounds, which provided many opportunities for learning. Some of the schools used their school grounds for learning activities but also preferred taking their learners on excursions.

All the schools were unanimous in their support for resource management. However, there was no mention of auditing of environmental issues such as energy, water or waste in their schools or communities.

A healthy environment was the fourth factor. Other health issues that affect schools include diseases, which are becoming increasingly prevalent in South Africa, such as malaria and bilharzia, which were not mentioned in the questionnaire by the schools. The outbreak of cholera and diarrhoea is closely linked to the problem of not having access to clean drinking water and inadequate sanitation facilities. Through the school environmental education policy water, health and sanitation issues could be linked to the curriculum.

School Calendar and the Curriculum was the title given to factor E. It was found that due to the vast number of special environmental days and weeks some of the schools found it difficult to integrate all of them into their school curriculum activities.

The schools did not place much emphasis on the importance to Action Projects and Competitions. The majority of the schools were not affiliated to the listed organizations. Action projects in environmental education encourages learners to develop useful skills such as working in a team, arranging special events, to increase environmental awareness and education in schools, to encourage and motivate effective and sustainable environmental action.

Factor G, Clubs in the School Environmental Education Policy were supported by some of the schools, as they realised that adventure and cultural activities could be combined with club activities.

4.5 CONCLUSION

In this chapter the use of the questionnaire was explained and the data gathered was analysed. The questionnaire served as a suitable tool in information gathering and was ideal for a stable, consistent and uniform measurement. A wider coverage of issues was made possible through the questionnaire. Some recommendations based on the findings could be made, which will be related in chapter five.

CHAPTER FIVE

RECOMMENDATIONS

5.1 INTRODUCTION

Wherever we live and whatever we do, we all make decisions in our daily lives, which have an impact on the environment. These decisions are determined by a complex array of forces, which influence individual action (Martin 1993:4). People's cultural context, community living, the education they receive at school and elsewhere, the media, and political, social and economical ideological opinions, for example, make them the way they are and way they view and use the environment. If environmental problems are to be solved, all these different aspects of people's lives have to be involved in improving the quality of decision – making about environmental use and interaction.

In chapter four, the data collected was analysed and interpreted. This chapter will focus on recommendations based on the findings. The idea is to suggest possible criteria for the effective implementation of environmental education policies in schools.

5.2 RECOMMENDATIONS

Based on the findings in chapter four the following are recommended.

5.2.1 RECOMMENDATIONS IN TERMS OF DEVELOPMENT OF A SCHOOL ENVIRONMENTAL EDUCATION POLICY

School environmental education policies should be developed through consultation with all stakeholders and made available and accessible to all members of the school community. An important component of the school environmental education policies was the evaluation and review process. It is important to specify in a policy when

evaluation and review will be done. The continuous evaluation and review of the environmental education policies could help schools to check whether they are progressing the way they have planned and also allow continuous improvements. The important question about evaluation and review is, "has the school been able to do the things that they stated they would do for each key element in the policy?" By carefully looking at each key element that had been covered in the policy it would be easier to establish what was accomplished or not and how best improvements should be made. It is important to remember that policy development is a process of problem solving, if one idea does not work, it is always important to determine why and to try a new one. Through the school environmental education policies educators and learners should practice environmental friendly behaviour patterns. This would be reflected in their lifestyle within and outside the institution. The school environmental education policies via the curriculum could contribute to producing a well developed human being who would display the correct values and ethics which would enable him /her to maintain a sustainable living within his/her environment.

5.2.2 RECOMMENDATIONS IN IMPLEMENTING A SCHOOL ENVIRONMENTAL EDUCATION POLICY – SCHOOL GROUNDS AND FIELDWORK

An active learning programme requires learners to actively explore the school grounds and / or surrounding area. In this regard, local people are an often-overlooked source of information. Perspectives developed in school learning materials did not often reflect knowledge that has direct local relevance. The school curriculum could be enriched with local stories, history and community experiences of change and how people used the local environment in earlier times. Programmes that enabled learners to interact with local people and to find out about early history and change could be central to successful environmental education processes. Ecosystem studies often provided a useful focus for learning. Schools could choose any ecosystem; a forest, stream, wetland or grassland which are just suggestions. Urban environments could also present valuable opportunities for learning. It is important to prepare well for field trips and visits to environmental education centres, as well as to follow up the activities in the classroom. Field trips do not only have to take place to nature reserves or

environmental education centres. Other venues such as the local airport, bakery, nearby factory or farm can be considered. Field trips do develop learners cognitively and affectively, therefore it should be an important issue in the school environmental education policies.

As environmental education is such a functional discipline, it is advisable to integrate it as often as possible within all learning areas. It is easier if performance tasks are always compiled at the onset of each phase. Then, via thoroughly planned holistically approached lessons, integration should take place. Through performance tasks many different assignments could be included to involve a variety of Learning Outcomes and Assessment Standards. By doing so, a thorough knowledge, skills and value system within the attainment of outcomes would be inculcated.

The Revised National Curriculum Statement aims at clarity and accessibility both in its design and language. Two design features – learning outcomes and assessment standards clearly define for all learners the goals and outcomes necessary to proceed to each successive level of the system (RNCS 2004:6).

The principle of integrated learning is integral to outcomes-based education. Integration ensures that learners experience the Learning Areas as linked and related. It supports and expands their opportunities to attain skills, acquire knowledge and develop attitudes and values encompassed across the curriculum. It is important that the curriculum sets out progressively more complex, deeper and broader expectations of learners. Conceptual progression is a term used to describe this feature of a curriculum. In the Revised National Curriculum Statement, the assessment standards provide the conceptual progression in each Learning Area from grade to grade. At the same time, learners should not deal with assessment standards in isolation. Links must be made within and across learning outcomes and Learning Areas. The achievements of an optimal relationship between integration across learning areas and conceptual progression from grade to grade are central to this curriculum (RNCS 2004:7). Therefore the recommendations in the different key elements are mentioned according to the learning areas.

Many learning outcomes and assessment standards could be achieved using the school grounds and fieldwork as indicated below:

ECONOMIC AND MANAGEMENT SCIENCES LEARNING AREA

In the Intermediate Phase, Grade 5 Learning Outcome 4 Assessment Standard: Develops and uses observation sheets and questionnaires to do a needs analysis in the school or community. Learners could be provided with examples of audit sheets and then in groups develop their own sheets, and later complete them.

NATURAL SCIENCES LEARNING AREA

In the Foundation Phase (Grade R, 1,2,3) Learning Outcome 1: Scientific Investigation (Earth and Beyond): Weather observations. A weather station could be established at the school. If equipment for this station is made there will be links to Technology Learning Outcome 1 (Making and Designing). In the Foundation Phase (Grade R, 1, 2, 3,) Learning Outcome 1: Scientific Investigation: Soil and Compost studies could take place in the school grounds or with a compost column in the classroom. If the concept of growing healthy food in good soil is explored there could be links to *Life Orientation Learning Outcome 1 (Health Promotion)*. The Foundation phase (Grade R, 1, 2, 3,) learners could also be involved in collecting items and displaying these at a nature table in the corner of a classroom *(Learning Outcome 1: Scientific Investigation)*

The development of a school garden as well as school ground investigations could lead to the achievement of *Learning Outcome 1: Scientific Investigation (Concepts of life and Living)* for Foundation (Grade R 1, 2, 3) and Intermediate (Grade 4, 5, 6) phase learners. Field trips to municipal parks or nearby nature reserves and studies of various ecosystems, for example grassland and fynbos, can also contribute to this learning outcome.

MATHEMATICS LEARNING AREA

The planting of a vegetable garden on the school grounds could help learners in this learning area. They could do counting activities using the seeds from the beans and pumpkins planted in the garden. Measuring vegetable beds or compost heaps to teacher's specification by spacing them out by foot, or laying down spades could help

Foundation Phase (Grade R, 1, 2, 3) learners with *Learning Outcome 1 (Numbers, Operations and Relationships) and Learning Outcome 4 (Measurement).*

In the Foundation Phase (Grade 3), Learning Outcome 3 (Space and Shape) Assessment Standard: Reads, interprets and draws informal maps of the school environment or of an arrangement of three – dimensional objects and locates objects on the map. The learners could make maps to indicate where a vegetable garden could be laid out in the school grounds, or they could draw maps identifying healthy and unhealthy, safe or unsafe places in their school environment; or where recycling bins should be placed, or which road near the school should have a pedestrian crossing.

In the Foundation Phase (Grade 1-3), Learning Outcome 5 (Data Handling) Assessment Standard: Collects data in the classroom and school environment to answer questions posed by the teacher and class. The learners could count how many learners use the bin in the playground, or how many chip packets/sweet wrappers/apple cores did they find in the school ground after break. The data collected from litter surveys or paper recycling could be organized into tables and displayed as graphs in a prominent place for the whole school to see. The learners could keep records of, for example, the number of rubbish bags that are collected from the school each week. This number could decrease if, for example a compost heap or paper recycling project is set up.

LANGUAGES LEARNING AREA

In the Foundation Phase (Grade 3), Learning Outcome 5 (Thinking and Reasoning) Assessment Standard: Uses language for thinking and problem solving: discusses and solves problems in groups (for example, 'how can we keep our environment clean'). The learners could be assigned to different areas of the school grounds and discuss how to take care of these areas in the best possible way.

In the Foundation Phase (Grade 2), Learning Outcome 5 (Thinking and Reasoning) Assessment Standard: Collects and records information in different ways: carries out a simple survey: records information in different ways (for example, tables, charts,

diagrams, graphs). The learners could conduct a waste survey in the classroom or after break in the school grounds and display the information.

5.2.3 RECOMMENDATIONS IN IMPLEMENTING A SCHOOL ENVIRONMENTAL EDUCATION POLICY – RESOURCE MANAGEMENT

Environmental auditing involves the evaluation of current environmental practices and guided decisions as to whether change is necessary. In schools, auditing could help with the assessment of the school's general environmental performance thus evaluating their current environmental practice and identifying priorities for change. If environmental auditing is done carefully and methodically, reliable information could be gathered about problem areas and their solutions. Schools could do a simple waste audit by sorting waste in each classroom and in the school as a whole. They could measure the amount of waste paper as well as how many cans are thrown away in a week or a month. Schools could try to develop action plans to reduce waste or start a recycling project at their school. Savings in energy could easily be measured by comparing electricity bills from month to month (especially after trying different ways to reduce energy use in their schools – for example, insulating hot water geysers with shredded newspaper and foil can reduce electricity usage by a third).

By developing school water policies and management plans, water audits of both quality and quantity for Water Week in March could be carried out. A number of useful resource materials for auditing water use and water quality have been developed through the Department of Water Affair & Forestry's 2020 Vision for Water School Project. This project aims to heighten awareness of the water crisis in South Africa and to develop skills and values to promote equitable and sustainable use of water. Invading alien plant species are causing billions of rand of damage in South Africa and threatening many waterways. The 'Working for Water' programme is an alien clearing initiative led by the Department of Water Affairs & Forestry. This programme could be used to remove all existing alien plant species found in the schools grounds. Planting of indigenous and succulent plants could assist in the water crisis.

Many learning outcomes could be achieved using resource management as a focus for lesson plans in the following learning areas:

TECHNOLOGY LEARNING AREA

In the Foundation Phase (Grade R, 1, 2,3), Learning Outcome 1 requires learners to make products from different materials. The learners could make articles from waste (for example, puppets) and discuss why it is important to re-use waste! In Grade 5 the learners could identify possible positive and negative effects of scientific developments. A project on the benefits and negative impacts of industrial papermaking could help learners to achieve competence in this outcome.

ECONOMIC AND MANAGEMENT SCIENCES LEARNING AREA

This learning area has many learning outcomes which link to wise resource management. The educators could explore with the learners where classroom materials like paper, paint, and pencils come from. For example, paper and pencils come from plantation of trees (visit one if possible), which use space and water. The making of paper creates pollution. Therefore decrease the use of paper. Then allow learners to draw up lists of how they could save materials. Such an activity would help the Grade 2 learners with *Learning Outcome 1 (Assessment Standard: Expresses the importance and way of saving and not wasting money and other resources such as water and electricity).* This activity could also be used with Grade 1 learners and linked to *Learning Outcome 2 (Assessment Standard: Name ways and importance of using limited classroom materials without waste.)* The Grade 1 learners could also make badges from bottle tops, decorate jam jars or tins for flowers or pen pots for *Learning Outcome 2 (Assessment Standard: Uses artistic skills (e.g. drawing, cutting, measuring, pasting)) to design and produce environmentally friendly products that could be sold or exchanged in the community.*

ARTS AND CULTURE LEARNING AREA

In the Intermediate Phase, Grade 4 learners could work in groups to make masks, crafts, artefacts, costumes, collages or puppets using natural, waste or found materials. Thereafter a discussion could take place on why it is good to re-use and recycle waste. This would help learners to achieve competence in *Learning Outcome 1: creating, interpreting and presenting (Assessment Standards: Make masks, crafts, artefacts,*

costumes, collages or puppets using natural, waste or found material and, if done in groups, collaborates with others to plan the making and use of masks, crafts, costumes.)

NATURAL SCIENCES LEARNING AREA

The concepts of Matter and Materials could be taught through waste audits and recycling projects. Links could be made to *LIFE ORIENTATION* learning area if learners could explore biodegradable waste and how recycling of nutrients contributes to a healthy environment.

SOCIAL SCIENCES LEARNING AREA

There are many links from a Resource Management focus to Social Sciences (Geography). *Learning Outcome 3 (Exploring Issues) for Foundation Phase, Grade 2 covers availability of resources such as space, water, electricity; as well as the concept of a resource and daily use of resources such as water, air and energy.* The learners could conduct waste or energy audits at school or home. In the Foundation Phase, *Grade 3 learners need to explore issues (Learning Outcome 3) regarding items that learners and family use regularly and resource and processes from which these are obtained.* The learners could conduct life cycle analyses of products chosen by individual learners or groups, for example, shoes, newspapers, etc. Water and energy audits would be useful for *Learning Outcome 3 (make informed decisions about social and environmental issues and problems) for both Grade 5 learners (one Assessment Standard focuses on resources (renewable and non-renewable)- use of natural resources and focus on water and energy)* and Grade 8 learners (an assessment standard focuses on use and abuse of people and natural resources; investigates ways of reducing resource consumption; make suggestions to guide sustainable living practices).

MATHEMATICS LEARNING AREA

In the Foundation Phase (Grade R, 1, 2, 3) Learning Outcome 1 (Numbers, Operations and Relationships) and Learning Outcome 4 (Measurement). The learners could use cups or buckets to measure the volume of water wasted from a dripping tap. *In the Foundation Phase, Grade 3 Learning Outcome 4 (Measurement) Assessment Standard:*

Solve problems involving calculations with and conversions between minutes-hours, hours-days, days-months. The learners could use teaspoons or cups to measure how much soil learners can produce in a certain period, by rubbing two stones together (this will link to Natural Science Learning Area and will teach learners how long soil takes to form so that erosion could be avoided).

LANGUAGES LEARNING AREA

In the Foundation Phase, Grade 2 Learning Outcome 5 (Thinking and Reasoning) Assessment Standard: Work with charts. The learners could develop charts to keep track of number of rubbish bags the class generates per week or number of boxes of paper used.

5.2.4 RECOMMENDATIONS IN IMPLEMENTING A SCHOOL ENVIRONMENTAL EDUCATION POLICY – HEALTHY ENVIRONMENT

To promote a healthy and safe environment for all learners, health issues such as water, sanitation, nutrition, HIV/ AIDS, drugs abuse, alcoholism, personal hygiene, diseases, sex education and teenage pregnancies can be included in the school curriculum via the school environmental education policy. Schools should develop learning programmes with healthy eating as a focus. Nutrition should be made an important health issue in schools.

The numbers of HIV/AIDS infections are increasing rapidly and this disease is currently considered a crisis in South Africa. HIV/AIDS has an enormous social, cultural and economic impact. In his ‘Call to Action’ (1999), the then Minister of Education had identified dealing with the HIV/AIDS emergency as “the priority that underlies all priorities” and insisted that education needed to play its part to stem the epidemic and protect the rights of those infected with the HIV virus. The National Policy on HIV/AIDS was published in the Government Gazette (Notice 1926 of 1999) in August 1999 under the National Education Policy Act. Therefore, HIV/AIDS must be included in the school environmental education policies.

An environmental committee should be formed, with the aim to ensure that learners and local community become environmentally aware in order to keep the school and the surrounding environment clean and healthy. The role of this committee is huge as it ensures that the goals covered in the school environmental education policy are achieved.

SOCIAL SCIENCES LEARNING AREA

In the Foundation Phase, Grade 1 learners need to identify issues affecting health and safety at school / home and ways to improve these for Social Science (Geography), *Learning Outcome 3 (Exploring Issues)*. The learners could do a health audit and include it in the school environmental education policies. The Grade 5 Social Science educators could invite a community nurse to visit the school or organize a visit to the local clinic or set a project on cholera or HIV/AIDS. This could help learners to achieve competence in *Learning Outcome 3 (Make informed decision about social and environmental issues and problem)* and the *Assessment Standard that focuses on disease, understanding the risks and reducing these*. The learners themselves could conduct a health audit and then prepare posters or drama presentations on health issues such as sanitation or disease.

The school Governing Body could be more actively involved in supporting environmental initiatives at the school through the environmental education policies. They could make provisions for environmental initiatives in the budget. The minutes of meetings could reflect that environmental issues concerning the school are discussed; examples of topics to be addressed should include HIV/AIDS, fundraising drives, recycling and food gardens. All these initiatives could contribute towards the budget. Thus funds raised contribute to environmental activities such as purchasing of seeds, equipment, learner and teacher support materials for environmental education, leading to a healthier environment.

There exists meaningful environmental learning in the schools by the educators which involved all three orientations, learning about the environment, learning in the environment and learning/taking action for the environment. Learning about the environment increases the knowledge and understanding of the biophysical, social,

cultural, economic and political processes that shapes the world. This enables the learners to make decisions about how to interact with the world. Learning in the environment provides opportunities to investigate environmental problems that are experienced at local level. Taking action for the environment empowers them to make changes for a better world and to respond to local issues and risks. Preparing learners to address environmental issues requires knowledge and skills. This could be developed through active learning, critical thinking and involvement in real environmental issues and encounters in the learner's immediate environment.

5.2.5 RECOMMENDATIONS IN IMPLEMENTING A SCHOOL ENVIRONMENTAL EDUCATION POLICY – CLUBS AND THE CURRICULUM

By commencing and running an environmental club the learners could learn skills such as developing budgets, managing and raising money for club events. Learners will be able to demonstrate knowledge and the ability to apply responsibly a range of managerial, consumer and financial skills.

Many learning outcomes and assessment standards could be achieved using clubs in the following learning areas:

ARTS AND CULTURE LEARNING AREA

Celebrations for Heritage Day could involve traditional dress, music and dance followed by lessons in exploring and understanding these further. The learners will be able to explain the importance of conserving natural and cultural heritage. In the Arts and Culture lessons, learners could use themes or topics from the environment, directed by the educator, in a dramatic play. The assessment standards require learners to dramatise social, cultural or environmental issues through the use of different drama techniques, for example, role plays.

ECONOMIC AND MANAGEMENT SCIENCES LEARNING AREA

In this Learning Area educators could consider projects, which link environmental and economic aspects, for example, recycling, building a bird hide at a local wetland and asking for donations. For *Learning Outcome 3, in the Intermediate Phase the Grade 4 and 5 learners need to achieve competence in the following assessment standard: participate in the management of a classroom project, as mentioned above.*

SOCIAL SCIENCES LEARNING AREA

For Social Sciences (Geography) Learning Outcome 3 (Exploring Issues) in the Foundation Phase, the Grade 2 learners need to take action to improve places in the local environment (assessment standard: Identify a local issue and ways to improve a local place). The learners could be involved in an adopt-a-spot project or competition in which different groups of learners could take care of designated areas in the school ground or close to the school. The Grade 3 learners could learn about the concept of pollution and its broad effects *(Assessment Standard: identify a pollution issue and propose solutions).* They could start a paper recycling project.

5.2.6 RECOMMENDATIONS IN IMPLEMENTING A SCHOOL ENVIRONMENTAL EDUCATION POLICY – SCHOOL CALENDAR AND THE CURRICULUM

Schools could launch a whole school project to focus on special environmental days and environmental weeks. Alternatively, different phases could choose different related environmental focuses or issues to celebrate different special environmental days or weeks.

Schools could plan a number of activities on these special days, ranging from tree planting activities and clean-up campaigns to water quality testing. Schools could also use these environmental themes and special days to initiate longer term projects which focus learners' attention on environmental issues. This could link to other parts of the schools environmental education policies and management plan. With an Outcomes Based curriculum framework, educators could develop cross-curricular learning programmes with a relevant environmental theme. Celebrating these days could simply

be a matter of remembering the day at a school assembly, or it could be as extensive as establishing a school greening project during Arbor Week. These special environmental days could be integrated in the school curriculum activities through the environmental education policies.

Many learning outcomes and assessment standards could be achieved using environmental days or weeks in the following learning areas:

ARTS AND CULTURE LEARNING AREA

Learning Outcome 1 (Creating, Interpreting and Presenting) could be achieved by the preparation of posters before any special environmental day/week. On Heritage Day, school celebrations could include presentation of dance, music, song or drama. The lessons in the classroom could include reflection on the source of these presentations, and reflect on differences in past and present contexts. This will support learning for Grade 8-9 Assessment Standard: Learns and performs steps from dances, or songs or music, of popular culture; performance of poem or prose or Learning Outcome 3 (Reflecting) for example Grade 9 Assessment Standard: Reflects on and compares how social dances reflect their time. On Human Rights Day, Grade 7 learners could present artwork that explores human rights in South Africa thus developing competence in *Learning Outcome1 (Creating, Interpreting and Presenting).*

NATURAL SCIENCES LEARNING AREA

Learning Outcome 1, Assessment Standard: Conducting investigations and collecting data and Learning Outcome 1, Assessment Standard: Evaluating data and communication findings:

- World Meteorological Day (23 March): Commence learners' observation of weather and seasons
- National Water Week (in March): Explore diversity of creatures in a pond or stream; the role of water in ecosystems and the impact of human activities on water quality and quantity
- World Environment Day (5 June): display learners' projects; kick-start investigation into energy production, pollution, etc.

- National Arbor Week (first week in August); use compost to feed trees in the school grounds and plant trees

LANGUAGES LEARNING AREA

In the Intermediate Phase, (Grade 4, 5 ,6) Learning Outcome 4 (Writing) Assessment Standard: Designs media texts .The learners could design simple posters or notices to inform the rest of the school about an approaching environmental day. Following a celebration of an environmental day the learners could write simple news reports.

5.2.7 RECOMMENDATIONS IN IMPLEMENTING A SCHOOL ENVIRONMENTAL EDUCATION POLICY – ACTION PROJECTS AND COMPETITIONS

Action projects and Competitions could provide valuable learning opportunities. They could be taken up by the whole school, a class or by the environmental clubs. An active learning programme would often result in learners taking action to solve a local environmental problem or issue. An action project could be a possible response to the identification of an environmental issue. If an audit indicated that bare soil and \or soil erosion were issues, then a useful action project could involve the greening of the school community. An action project for Arbor Week could involve planting of trees in or near the school. Other action projects could be a school campaign to save energy or regular water quality monitoring of pollution in rivers near the school, greening of the school grounds, recycling and paper making, clearing alien vegetation or adopting –a-spot. If an audit indicates the need for waste minimisation, schools should think about a recycling project.

Action projects would enable school communities to take action for the environment by:

- Reducing environmental impact caused by school activities,

- Creating an environmental ethic and enable action environmental action processes among members of the school community, and
- Saving money for the school community and reducing costs and generating funds.

Competitions could also be an opportunity to share work and ideas, and to learn from others about what they are doing. Increasingly, competitions are being seen less as competitive interaction, and more as opportunities for young people to learn and work together. Team entries encourage group work amongst learners, and often the emphasis is on sharing rather than competing. Some competitions offer exciting prizes. Many also provide useful guidelines for individual research and co-operative action research projects. Schools could think of developing their own competitions for their schools and perhaps several local schools could participate in the competition. They could consider an inter-class or inter-school environmental quiz. They could set up their own EnviroQuiz by compiling questions that cover all aspects of the environment- biophysical (or natural), social, economic and political.

Activities in which clubs could become involved, are camps, excursions, working at wildlife rehabilitation centres, developing field guides, working with museums, recycling and many more. Schools could find out if there is a local non- governmental organisation (NGO) or government department, municipal organisation or museum that supports clubs in their area. There are a number of club programmes, for example, EcoLink, EcoClubs, Landsdiensklubs and the Wildlife & Environment Society of South Africa (WESSA) that one could join. WESSA has developed a Clubs Action Kit for schools which contains guidelines for starting and running school environmental clubs. These activities could be opportunities for teambuilding and individual growth.

5.3 CONCLUSION

We are becoming increasingly aware that untangling the different dimensions of an environmental issue and resolving it, is no simple matter. South Africa is faced with a number of serious environmental issues ranging from poverty, escalating development and modernization, water and air pollution, HIV/AIDS, biodiversity loss to global warming. Many ways of solving these problems such as better technology and

legislation have been proposed. However, locally and internationally, it has been recognized that environmental education must be considered as a key factor in any strategy to resolve the environmental crises.

A concerted effort should be made by all stakeholders to implement school environmental education policies. Hopefully the recommendations in this chapter could empower all role players to carry out the development and effective implementation of school environmental education policies.

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Annexure 1:

The Questionnaire

DR YUSUF DADOO PRIMARY SCHOOL

DATE : 26 May 2004

THE PRINCIPAL

DEAR SIR/MADAM

EFFECTIVE IMPLEMENTATION OF SCHOOL ENVIRONMENTAL EDUCATION POLICIES IN A SCHOOL DISTRICT IN GAUTENG.

I am currently busy with my research on the above topic. Therefore one questionnaire has been enclosed. Kindly identify one member on your staff who's main aim is to ensure that his/her fellow colleagues, learners and local community are environmentally aware through the effective implementation of the school environmental education policy. Please

Questionnaire on School Environmental Education Policy

Dear Colleagues

It would be highly appreciated if you will kindly answer the following questions relating to your school environmental education policy. Kindly indicate your response with a tick (✓). Where necessary, space has been provided for written explanation.

NAME OF SCHOOL:_____

PRIMARY/SECONDARY/PRIVATE: _____

DISTRICT: _____ DATE: _____

For office use only:
NUMBER
☐☐☐ 1 2 3

A. ENVIRONMENTAL POLICY TO SUSTAINABLE MANAGEMENT

1. HAS YOUR SCHOOL DEVELOPED AN ENVIRONMENTAL EDUCATION POLICY USING THE ECO-SCHOOL TOOLKIT OR PACK?	YES ☐	NO ☐	Q1 ☐ 4
2. IF YES, DO YOU EVALUATE THE IMPLEMENTATION OF THE KEY ELEMENTS (e.g. HEALTHY ENVIRONMENT) IN THE POLICY. IF YES, PLEASE STATE: HOW OFTEN?	YES ☐	NO ☐	Q2 ☐ 5
WHY?			

B. SCHOOL GROUNDS AND FIELDWORK

3. ARE THERE PROCEDURES IN THE POLICY FOR EDUCATORS TO NETWORK WITH OTHER LOCAL SCHOOLS TO EXCHANGE ENVIRONMENTAL EDUCATION INFORMATION, IDEAS OR EXPERIENCES WITH REGARDS TO POLICY STATEMENTS (e.g. SCHOOL GROUNDS)	YES ☐	NO ☐	Q3 ☐ 6
4. DOES YOUR SCHOOL'S ENVIRONMENTAL EDUCATION POLICY STIPULATE CLEARLY THE ACTION PLANS TO BE CARRIED OUT ?	YES ☐	NO ☐	Q4 ☐ 7
5. DOES THE SCHOOL ENVIRONMENTAL EDUCATION POLICY PROMOTE THE USE OF THE SCHOOL GROUNDS IN CURRICULUM ACTIVITIES ?	YES ☐	NO ☐	Q5 ☐ 8
6. WHEN PLANNING LEARNING PROGRAMMES DO EDUCATORS SOMETIMES USE THE SCHOOL GROUNDS TO SUPPORT LEARNING ACTIVITIES? EXPLAIN VERY BRIEFLY:	YES ☐	NO ☐	Q6 ☐ 9

7.	DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY ENCOURAGE FIELD WORK?	YES ☐	NO ☐	Q7 ☐ 10
8.	DOES THE SCHOOL MANAGEMENT STRUCTURE SUPPORT THE FUNDING AND GENERAL PLANNING OF FIELD TRIPS ? HOW?	YES ☐	NO ☐	Q8 ☐ 11

C. RESOURCE MANAGEMENT

9.	IS RECYCLING PROMOTED IN THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY?	YES ☐	NO ☐	Q9 ☐ 12
10.	DOES YOUR SCHOOL HAVE A PAPER RECYCLING PROGRAMME ?	YES ☐	NO ☐	Q10 ☐ 13
11.	ARE EDUCATORS MADE AWARE OF WAYS TO MANAGE SCHOOL RESOURCES SUCH AS ELECTRICITY,WATER AND PAPER MORE WISELY ?	YES ☐	NO ☐	Q11 ☐ 14
12.	ARE WASTE AND RECYCLABLE MATERIALS USED IN CLASSROOM ACTIVITIES?	YES ☐	NO ☐	Q12 ☐ 15

D. HEALTHY ENVIRONMENT

13.	DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY SUPPORT THE IMPORTANCE OF WATER AT YOUR SCHOOL?	YES ☐	NO ☐	Q13 ☐ 16
14.	DOES YOUR SCHOOL HAVE ACCESS TO WATER-ON-TAP ?	YES ☐	NO ☐	Q14 ☐ 17
15.	IS THE DRINKING WATER CLEAN FOR CONSUMPTION ?	YES ☐	NO ☐	Q15 ☐ 18
16.	DOES YOUR SCHOOL HAVE TANKS TO COLLECT RAIN WATER ?	YES ☐	NO ☐	Q16 ☐ 19
17.	ARE THERE ADEQUATE TOILETS FACILITIES FOR LEARNERS?	YES ☐	NO ☐	Q17 ☐ 20
18.	ARE THERE ADEQUATE TOILETS FACILITIES FOR EDUCATORS?	YES ☐	NO ☐	Q18 ☐ 21

19. ARE THE TOILETS CLEAN & HYGIENIC AT ALL TIMES ?	YES ☐	NO ☐	Q19 ☐ 22
20. ARE HAND WASHING FACILITIES AVAILABLE ?	YES ☐	NO ☐	Q20 ☐ 23
E. SCHOOL ENVIRONMENT IN THE CURRICULUM			
21. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY PROVIDE FOR ENVIRONMENTAL CALENDER ACTIVITIES ?	YES ☐	NO ☐	Q21 ☐ 24
22. ARE THE FOLLOWING ENVIRONMENTAL DAYS CELEBRATED IN YOUR SCHOOL ?			
WORLD WETLANDS DAY	YES ☐	NO ☐	
HUMAN RIGHTS DAY	YES ☐	NO ☐	
WORLD HEALTH DAY	YES ☐	NO ☐	
EARTH DAY	YES ☐	NO ☐	
SOUTH AFRICAN FREEDOM DAY	YES ☐	NO ☐	
WORLD ENVIRONMENT DAY	YES ☐	NO ☐	
WORLD POPULATION DAY	YES ☐	NO ☐	
HERITAGE DAY	YES ☐	NO ☐	
WORLD TOURISM DAY	YES ☐	NO ☐	
WORLD FOOD DAY	YES ☐	NO ☐	
WORLD HABITAT DAY	YES ☐	NO ☐	
INTERNATIONAL DAY OF DISABLED PERSONS	YES ☐	NO ☐	
UNIVERSAL CHILDREN'S DAY	YES ☐	NO ☐	
WORLD AIDS DAY	YES ☐	NO ☐	Q22 ☐ 25
23. ARE THE FOLLOWING ENVIRONMENTAL WEEKS CELEBRATED IN YOUR SCHOOL ?			
NATIONAL WATER WEEK	YES ☐	NO ☐	
NATIONAL ENVIRONMENT WEEK	YES ☐	NO ☐	
NATIONAL ARBOR WEEK	YES ☐	NO ☐	

NATIONAL READATHON WEEK	YES ☐	NO ☐	
NATIONAL MARINE WEEK	YES ☐	NO ☐	
INTERNATIONAL WEEDBUSTER WEEK	YES ☐	NO ☐	
DISARMAMENT WEEK	YES ☐	NO ☐	Q23 ☐ 26
24. ARE ANY OF THESE CELEBRATIONS LINKED TO THE CURRICULUM ? IF YES: BRIEFLY EXPLAIN HOW?	YES ☐	NO ☐	Q24 ☐ 27
25. ARE THERE ENVIRONMENTAL EDUCATION ACTIVITIES AT ALL LEVELS IN THE SCHOOL? (e.g. WATER WEEK)	YES ☐	NO ☐	Q25 ☐ 28
26. ARE LEARNERS INVOLVED IN THE PLANNING OF THESE ACTIVITIES ?	YES ☐	NO ☐	Q26 ☐ 29
F. ACTION PROJECTS AND COMPETITIONS			
27. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY ENCOURAGE ACTION PROJECTS ?	YES ☐	NO ☐	Q27 ☐ 30
28. LIST ANY GROUP OR ORGANISATION YOUR SCHOOL IS AFFILIATED TO THAT SUPPORT LEARNERS IN PARTICIPATING IN ACTION PROJECTS			
• WESSA	YES ☐	NO ☐	
• ENVIROTECH	YES ☐	NO ☐	
• PAPER RECYCLING	YES ☐	NO ☐	
• COLLECT-A-CAN	YES ☐	NO ☐	
• SOUL BUDDYZ	YES ☐	NO ☐	
• EDU-PLANT	YES ☐	NO ☐	
• ENVIRO 2000	YES ☐	NO ☐	Q28 ☐ 31
29. DO LEARNERS IN YOUR SCHOOL PARTICIPATE IN ACTION PROJECTS IN THE FOLLOWING			

AREAS ?			
COMMUNITY GARDENING	YES ☐	NO ☐	
WASTE REDUCTION AND RECYCLING	YES ☐	NO ☐	
COMMUNITY OUTREACH :			
CARE FOR THE AGED	YES ☐	NO ☐	
CARE FOR THE ORPHANS	YES ☐	NO ☐	
ANIMAL OR PLANT CONSERVATION	YES ☐	NO ☐	
HABITAT PROTECTION OR RECLAMATION	YES ☐	NO ☐	Q29 ☐ 32
30. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY MAKE PROVISION FOR COMPETITIONS ?	YES ☐	NO ☐	Q30 ☐ 33
31. DO LEARNERS IN YOUR SCHOOL PARTICIPATE IN COMPETITIONS IN THE FOLLOWING AREAS?			
SCIENCE COMPETITIONS	YES ☐	NO ☐	
ESSAY COMPETITION WITH AN	YES ☐	NO ☐	
ENVIRONMENTAL FOCUS	YES ☐	NO ☐	
OLYMPIADS WITH AN ENVIRONMENTAL FOCUS	YES ☐	NO ☐	
ENVIRO COMPETITIONS	YES ☐	NO ☐	
CULTURE AND ART COMPETITION WITH AN			
ENVIRONMENTAL FOCUS	YES ☐	NO ☐	
ENVIRO-QUIZ	YES ☐	NO ☐	Q31 ☐ 34
G. CLUBS IN THE CURRICULUM			
32. DOES THE SCHOOL HAVE ONE OR MORE CLUBS THAT FOCUS ON ENVIRONMENTAL ISSUES?	YES ☐	NO ☐	Q32 ☐ 35
33. ARE LEARNERS INVOLVED IN THE CLUBS?	YES ☐	NO ☐	Q33 ☐ 36
34. DOES THE SCHOOL'S ENVIRONMENTAL EDUCATION POLICY SUPPORT THE IMPORTANCE OF CLUBS IN SUPPORTING ENVIRONMENTAL LEARNING IN THE CURRICULUM?	YES ☐	NO ☐	Q34 ☐ 37

35.	ARE THE CLUB ACTIVITIES MAINLY:			
	INFORMATION-BASED i.e. LEARNERS FIND OUT ABOUT SOMETHING	YES ☐	NO ☐	
	ACTION-BASED i.e. LEARNERS TAKE ACTION IN RESPONSE TO AN ISSUE	YES ☐	NO ☐	Q35 ☐ 38
36.	DO CLUB ACTIVITIES LINK WITH THE SCHOOL CURRICULUM? IF YES, WRITE DOWN SOME OF THE WAYS THESE CURRICULUM LINKS ARE MADE?	YES ☐	NO ☐	Q36 ☐ 39
37.	WOULD YOU LIKE TO ADD ANYTHING MORE WITH REGARDS TO THE SCHOOL ENVIRONMENTAL EDUCATION POLICY?	YES ☐	NO ☐	Q37 ☐ 40

THANK YOU FOR YOUR CO-OPERATION AND VALUABLE INPUT
MRS G.D. DEENANATH

Annexure 2:

Approval in Respect of Request to Conduct Research – G.D.E

UMnyango WezeMfundo
Department of Education

Lefapha la Thuto
Departement van Onderwys

Date:	24 May 2004
Name of Researcher:	Deenanath, Geetha
Address of Researcher:	17 Gulshan Street
	P.O. Box 9007
	Azaadville, 1750
Telephone Number	(011) 4121648

4. *A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Senior Manager (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that*

Annexure 3:

Approval in Respect of Request to Conduct Research – District D2

Phone: (011) 660 4581
Fax: (011) 953-4324

Gauteng Dept Of Education
Gauteng West District – D2

GAUTENG

Fax