

ENVIRONMENTAL EDUCATION FOR SUSTAINABLE  
UTILISATION OF NATURAL RESOURCES:  
THE CASE OF SELECTED SECONDARY  
SCHOOLS IN SOWETO

by

Cyril Mpilo Buhlungu

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of the requirements for the Master of Philosophy degree in the  
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at the University of Fort Hare

Supervisors: Professor Simphiwe E. Mini and Professor Cecil Seethal

## Declaration

I declare that this dissertation is based on my own work, except otherwise stated and that it has not been submitted for a degree at any other University.

Signature

A handwritten signature in black ink, appearing to read 'Buhlungu', written over a horizontal line.

Buhlungu C.M.

Date: January 2003

Place: University of Fort Hare

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## ABSTRACT

In South Africa, particularly in Soweto secondary schools environmental education has never enjoyed the same status as other established subjects such as Geography, Biology and History. This has resulted in learners losing interest in environmental education.

There is a lack of environmental education at secondary schools that results in a lack of environmental awareness amongst learners.

This study seeks to recommend the integration of environmental education within the policies of the Gauteng Department of Education thereby contributing towards the establishment of environmental education as an independent subject in secondary schools.

There is a need for learners to study environmental education and its relevance to career choices. A survey research method was used amongst principals, teachers and learners. It transpired from the findings that there is a lack of environmental consciousness amongst learners, accompanied by lack of training to teach environmental education by teachers and principals.

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## LIST OF ABBREVIATIONS

ABET	Adult Basic Education and Training
CEE	Council for Environmental Education
ECSA	Education Communication for Sustainability in Africa
EE	Environmental Education
EEASA	Environmental Education Association of South Africa
EECI	Environmental Education Curriculum Initiative
EEPI	Environmental Education Policy Initiative
GDE	Gauteng Department of Education
HSRC	Human Science Research Council
IEE	International Environmental Education Programme
IUCN	International Union for the Conservation of Nature
NAEE	National Association for Environmental Education
NQF	National Qualifications Framework
OBE	Outcomes Based Education
SANF	South African Nature Foundation
SARCCUS	South Africa Region Commission for the Conservation and Utilization of the Soil
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
WCS	World Conservation Strategy
WWF	World Wild Fund
WWLS	World Wild Life Society

## CHAPTER 1

### 1.1 Introduction

From 1948, the South African government introduced many segregation policies. These included different educational policies for the different population groups. The group mostly affected by these policies was the African group. After 1994 there emerged the need to change the previous education policies and to integrate them into one educational policy that would best meet the needs of the people of South Africa. This resulted in certain subjects for example, Geography being directly affected. The emphasis of this study will be on environmental education. In the previous curriculum Geography was offered as a subject and it incorporated certain elements of environmental education. Environmental education was taught across the curriculum.

According to Ballantyne and Winter (1999) Geography will no longer exist as a subject in the school curriculum. Learners will therefore be taught environmental education instead of Geography. It is essential that the knowledge and skills of Geography be addressed in the different learning areas. It is now possible for Geography to gain entry into the school curriculum through environmental education rather than vice versa, which was the situation in the past.

Environmental education can play a crucial role in promoting responsible environmental behaviour. Environmental knowledge promotes environmental attitudes and values. Environmental education can teach learners to be aware of the universe and their biophysical and social environment. In South Africa, learners have not participated actively in the drafting of the syllabus, namely, Curriculum 2005. They only accepted what was presented to them without questioning it. The future of environmental education and Geography will remain unresolved should this scenario not be addressed

Teachers should actively participate in the preparation of the syllabus. Other options should include seminars and workshops that should involve learners' participation in decisions on environmental policies and particularly, on environmental education. Studies have shown that children at younger ages are easily influenced by what they learn or observe at the tender age (Graig, 1992). The Convention on the Rights of the Child (1989), the United Nations Conference on Environment and Development (Earth Summit 1992) and the Second United Nations Conference on Human Settlements (City Summit, 1996) have all reinforced the active participation of learners and teachers on environmental issues. It is a fact that international policies regard participation by learners as an essential element for education on conservation. The White Paper on the Environment and Management policies (1997) stated that environmental education and training need to be integrated at all levels of the school curriculum.

Integration of environmental education at all levels would assist people particularly those from the disadvantaged sectors of society in developing social and organizational skills. This would promote capacity building programmes and projects where local and other knowledge would be utilized.

## 1.2 Problem Statement

Curriculum 2005 emphasizes an integrated approach to long life learning processes and it is based on learning areas. One of the major challenges associated with this approach is that subjects are no longer separated but integrated. This may not be a major problem for traditional subjects that have for many years enjoyed a more prominent status. However, subjects like environmental education will still remain marginalized and at the periphery in the Curriculum 2005. One of the major developments since 1994 is the single national education system and Curriculum 2005 provides a framework for the development of environmental education. There are eight learning areas in Curriculum 2005. Within these eight learning areas environmental education is offered within Natural Science and Social Science.

Environmental education lags behind other established disciplines. The only fields where environmental study topics can be found are in subjects such as Geography, Biology and Agriculture. These subjects deal with ecological issues, for example, feeding cycle, movement of nutrients, desertification, erosion, pollution and littering.

In Chapter 2, of South Africa's new constitution clause 24 of the Bill of Right states that everyone has a right to an environment that is not harmful to their health. This was not emphasized in the past regime.

### 1.2.1 Sub-Problems

- (a) The lack of environmental consciousness seems to increase environmental degradation amongst learners.
- (b) Nature conservation was perceived by the Gauteng Department of Education (GDE) as a small component of Geography, not as a scientific study that could be pursued by all learners at school (Lubisi, Harley and Gultig, 1995).

### 1.3 Research Questions

This study will be guided by the following research questions:

- (a) How has environmental education evolved internationally until the present day?
- (b) What is the meaning and position of environmental education within education as defined in Curriculum 2005?
- (c) What is environmental education's contribution to the field of Education?
- (d) What are the skills and knowledge that need to be developed to make learners more environmentally conscious?
- (e) What is the level of the learners' sensitization and motivation towards participation in environmental programmes?

#### 1.4 Aims of the Study

The aims of the study are to:

- (a) Identify and assess the importance of environmental education within the National Curriculum 2005.
- (b) Contribute towards the establishment of environmental education as an independent subject.
- (c) Sensitize educators and learners to the significance of
- (d) Environmental education at secondary level.
- (e) Contribute towards the development of environmental education in Curriculum 2005.
- (f) Recommend the adoption of environmental education in the Gauteng Education Department policies.

#### 1.5 Objectives of the Study

The objectives of the study are to:

- (a) Examine the professional relations amongst stakeholders of environmental education in the drafting of Curriculum 2005.
- (b) Determine the extent to which environmental education is integrated in the current learning area, namely, Curriculum 2005.
- (c) To find out whether the environmental education is included in a way that is simply understood by learners and educators.
- (d) Seek a relationship between environmental education and its applicability to the society.

## 1.6 Background to the Study

The case study for the research is based in Diepkloof and Orlando East in Soweto (Figure 1). The rationale behind selecting these areas is that many schools in the Soweto area have been ignored with regards to environmental education, secondly, accessibility in terms of transportation for reaching the said schools by the researcher was convenient. Finally, the researcher was of the opinion that a study like this has to be undertaken in an attempt to redress some of the environmental developments taking place by means of education. Soweto (originally an acronym for South Western Townships) comprises a number of townships that developed into a city as a result of a policy of territorial and political segregation followed by South Africa's successive white dominated governments during the 20th Century. At the beginning of the century the Witwatersrand gold mines attracted large numbers of black labourers who were housed in compounds on the mines. Company and municipal hostels housed migrant workers for other industries while some, such as domestic workers, resided at their places of work.

Industries developed, the need for a more settled work force grew and in turn, the need for homes. The miners' administration inter-colonial Native Affairs Commission of 1902-1905 advised against franchise rights for Africans that might weaken the supremacy of the ruling white class.

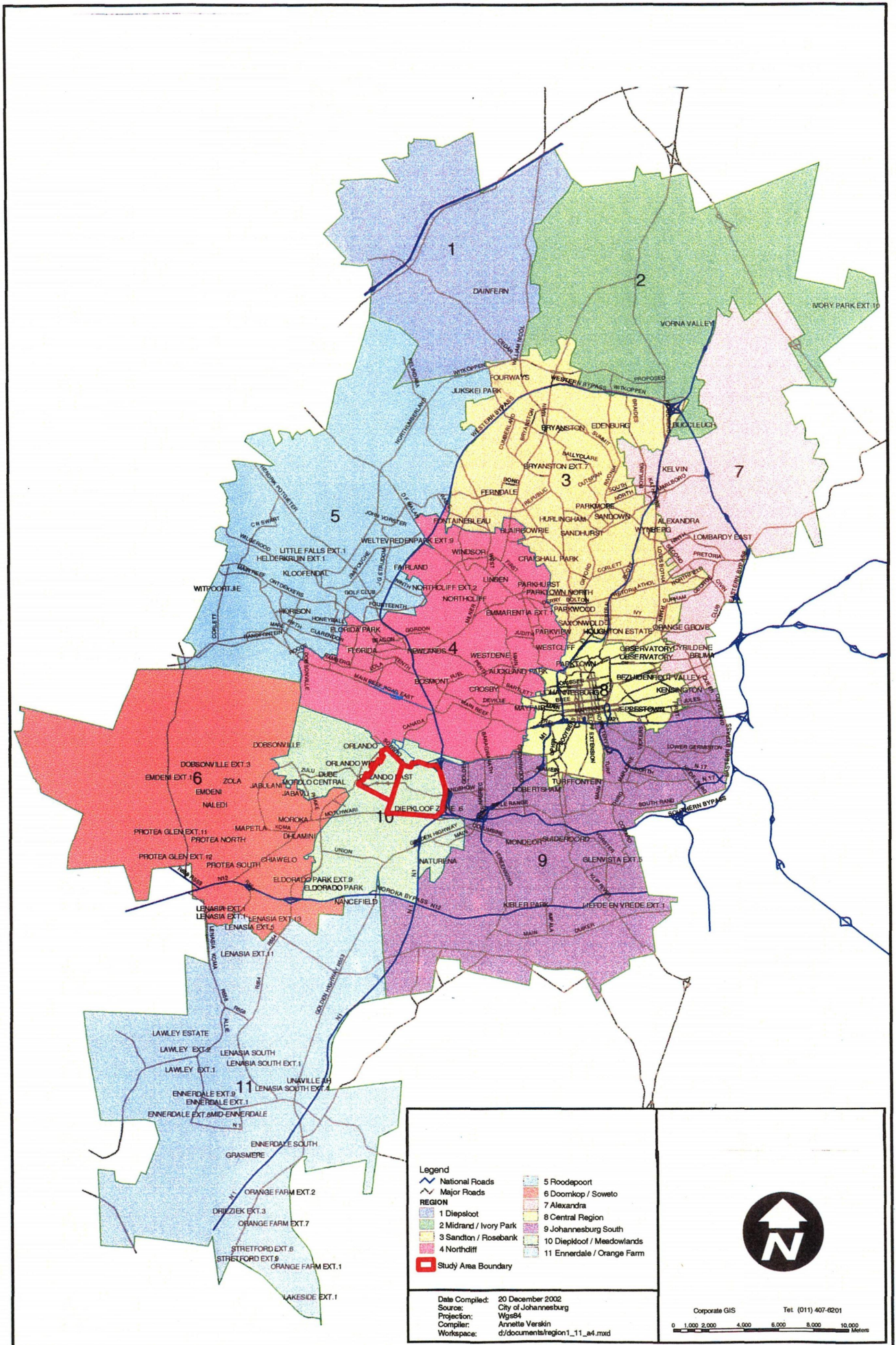


Figure 1. Study Areas. Diepkloof & Orlando East

They also approved the creation of "locations" for urban Africans on the outskirts of "white" cities. Klipspruit, south of Johannesburg, and two smaller locations within the town area, Western and Eastern Native Townships, were established in 1904.

The principle of segregation was reaffirmed in the constitution of the Union of South Africa in 1910. Subsequently an increasing number of laws were passed entrenching segregation between whites and "non-whites" in all walks of life. The exclusion of Africans from positions of power resulted in a storm of protest. During the 1910 and 1920 political and labour organisations were established throughout the country to unite Africans and oppose repression. Prominent amongst these were the South African Native National Congress (SANNC), renamed the African National Congress (ANC) in 1923, the Industrial and Commercial Union (ICU) and the South African Communist Party (SACP).

In 1931 the Johannesburg City Council organised a competition for the design of a new black township for 80 000 residents south west of Johannesburg called Orlando, it was the first of its kind in South Africa and, with Klipspruit, were to form the core around which other townships were to develop and eventually become Soweto. The winning entry called for a layout of concentrically grouped streets around cores in the form of squares, linked by diagonal streets. Several parks served as antipodes to the squares. Because of the low level of state assistance, the City Council could not provide the

required community services in Orlando and the result was masses of similar little detached houses in monotonous design. Their layout reflected western ideology and ignored grassroots community requirements.

### 1.7 1976 Student Uprising

In 1953 the apartheid government enacted The Bantu Education Act, which established a black education department in the Department of Native Affairs. The role of Department of Native Affairs was to compile a curriculum that suited the "nature and requirements of the black people." The author of the legislation, Dr Hendrik Verwoerd (then Minister of Native Affairs, later Prime Minister), stated that the Natives [blacks] must be taught from an early age that equality with Europeans [whites] is not for them (Soweto South Africa, 2002). Black people were not to receive an education that would lead them to aspire to positions they wouldn't be allowed to hold in society.

Instead they were to receive education designed to provide them with skills to serve their own people in the homelands or to work as labourers under whites. Bantu education did enable more children in Soweto to attend school than the old missionary system of education, but there was a severe lack of facilities. Nationally, pupil-to-teacher ratios went up from 46:1 in 1955 to 58:1 in 1967(Soweto South Africa, 2002). Overcrowded classrooms were used on a rotation basis. There was also a lack of teachers and many of those who did teach were

under qualified. In 1961, only 10 per cent of black teachers held a matriculation certificate.

Since of the government's homelands policy, no new high schools were built in Soweto between 1962 and 1971. Students were meant to move to their relevant homeland to attend the newly built schools there. Then in 1972 the government gave in to pressure from business to improve the bantu education system to meet business needs for a better trained black workforce. Forty new schools were built in Soweto. Between 1972 and 1976 the number of pupils at secondary schools increased from 12,656 to 34,656 (Soweto South Africa, 2002). One in five Soweto children was attending secondary school.

This increase in secondary school attendance had a significant effect on youth culture. Previously, many young people spent the time between leaving primary school and obtaining a job (if they were lucky) in gangs that generally lacked any political consciousness. Secondary school students established their own politicised identity. Clashes between gangs and students only furthered the sense of student solidarity. In 1973-1974 the government spent R644 a year on a white child's education but only R42 on a black child.

The Department of Bantu Education then announced it was removing the Standard 6 year from primary schools. Previously, in order to progress to Form 1 of secondary school, a pupil had to obtain a first or second-degree pass in Standard 6. Now the majority of

pupils could proceed to secondary school. In 1976, 257,505 pupils enrolled in Form 1, but there was space for only 38,000. Many of the students therefore remained at primary school. Chaos ensued. The African Students Movement, founded in 1968 to voice student grievances, changed its name in January 1972 to the South African Students Movement (SASM) and pledged itself to building a national movement of high school students who would work with the Black Consciousness (BC) organisation at black universities, namely the South African Students' Organisation (SASO).

This link with BC philosophies is significant as it gave students an appreciation for themselves as black people and helped politicise students. When the Department of Education issued its decree that Afrikaans was to become a language of instruction at school, the situation was volatile. Students objected to being taught in the language of the oppressor. Many teachers themselves could not speak Afrikaans, but were now required to teach their subjects through it. In 1974, however, the government decided to impose the use of Afrikaans as the medium of instruction in Mathematics, Social Studies, Geography and History at secondary school level.

Afrikaans was perceived to be the language of the oppressor. The imposition of Afrikaans triggered a violent reaction. The Afrikaans language issue was the detonator that led to the explosion of black anger and frustration about the inferior position of Africans in South Africa. Early in 1976 students started boycotting classes taught in

Afrikaans. In May 1976 Orlando West Junior Secondary School started a general class boycott that spread to other Soweto schools and led to sporadic clashes with the police. June 16 1976 was chosen for the students' demonstration day. By June 21, 130 people had been killed and 1 118 civilians and 22 policemen injured (Soweto South Africa, 2002). These clashes were the first in what became the most prolonged and violent confrontation between black protestors and the white government in South Africa's history.

In 1980s there were lots of class boycott in high schools. In 1984 the Department of Education and Training (DET) decided to close down almost all the high schools and re-open them in 1985. During the middle of 1986 the schools were disrupted again and schools were close down. After the school boycott lots of negotiations took place. There were rumours that Mr Nelson Mandel together with other political prison will be release in 1989.

After nearly a century, the end of the freedom struggle was heralded by the release of Nelson Mandela and other political detainees in 1990. South Africa's first democratic elections and the inauguration of Mandela as the country's first black president were achieved in 1994. All these political activities had negatively impact on the development of environmental education in Soweto high schools in general.

Several factors may have worked against the implementation of environmental education, for example, the lack of teacher's

initiative/community interest in environmental education, lack of teachers training in environmental education, the fact that environmental education had not established itself strongly in South Africa and in the world in general.

### 1.8 Significance of the Study

According to Ramsey and Hungerford (1989) Every Human action has an impact on the environment, both locally and globally. A primary goal of environmental education, though, is the development of responsible environmental behaviour in citizens, both as individuals and societal groups.

The findings of this research project will be used in raising the profile of environmental education as a subject or learning area in secondary schools. It will also help in the formulation of the educational policies or curriculum. The findings may also enhance the environmental awareness amongst the learners in secondary schools. When you train children at younger age, their capacities to protect their environment are likely to be strengthened at a tender age. There are other children who never get the opportunity to learn about the significance of environmental management.

The lack of environmental education in schools means that the existing problems such as air pollution, littering, solid waste, deforestation and ocean dumping continue to exist for a considerable period of time. The government will greatly benefit from this study as it is a relatively new concept wherein learners air their views.

Environmental education can help learners to utilize environmental resources and maintain sustainable development.

### 1.9 Delimitation of the Study

This study focused on secondary school education and the role of environmental education in secondary schools. Special attention were given to groups in grades 10, 11, 12. Six schools were selected for this study in Diepkloof and Orlando East, in Soweto, namely Bopasenatla, Fidelitas, Orlando High, Bona, Selelekele and Fions High schools.

### 1.10 Limitations of the Study

The study was limited by following essentials:

- (a) Due to the available resources the study is limited to two locations, namely, Diepkloof and Orlando East.
- (b) Financial constraints were another problem that the researcher encountered.
- (c) To retrieve policy documents from the Gauteng Department of Education was also problematic.
- (d) An analysis of the teachers' background, experience, and qualifications that would have enhanced the study was not possible due to constraints imposed on the study by time and costs.

### 1.11 Summary

This chapter has introduced the historical background of the study, the problem statements, aims and objectives. It also highlights the geographical location of the study areas. These aspects play a critical role because they give guidelines and direction in the study. The next chapter focuses on the literature review.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The first part of this chapter deals with the historical development of environmental education, focusing more on the international conferences held during the past years. The researcher seeks to establish how environmental education has evolved up to the present. The second part deals with environmental education in South Africa. Third, this chapter highlights the current national education policy in South Africa. The last two parts seek to show how environmental education has developed in South Africa.

#### 2.2 Historical Development of Environmental Education

The concern about the environment is not a new trend. Palmer (1998) argues that it is necessary to dispel the illusion held in the mind of contemporary educators that environmental education is a new product of growing concern for the environment, born out of recent curriculum initiatives. The environmental education movement has evolved over many years. Several influential pioneers clearly contributed to environmental education through theoretical formulations and practical application. Hart (1989:10) states that in

“Egypt, for example, wise men were sent out to assist and advise peasants to preserve their ancient culture and protect their environment”. Sterling (1992) attributes the founding of environmental education in the United Kingdom to a Scottish professor of botany and the originator of country planning, Geddes. He is regarded by many as the first to make the all important link between the quality of the environment and education. Geddes pioneered instructional methods, which brought learners into direct contact with their environment. In 1892 he opened an outlook tower in Edinburgh, which can still be seen today as the original field studies center. He developed the methods of civic and regional surveying with its innovative ideas and survey methods.

Gedde’s concern for education of the whole person anticipated and set the foundation for modern environmental education. His ideas were disseminated through the Le Play Society, to which many teachers and teacher trainers belonged in the second quarter of the century (Sterling, 1992). In 1872 three important conservation measures were undertake. The first Arbour Day was inaugurated in that year. Secondly, the concept “Conservation” acquired its modern meaning, and lastly the World’s National Parks, Yellowstone was declared (Wheeler and Martin, 1975).

In 1902 the school nature study union was founded and by the 1940s environmental studies had broadened into rural studies with the founding of a number of local teacher associations of rural studies.

It was from this rural studies movement that the term environmental studies evolved. In 1970 the National Rural Environmental Studies Association came in to existence. By the mid-1940's the form of environmental studies that was in use largely consisted of a mixture of teaching elements of geography, history and local nature study.

In 1908, America made great strides ahead of the world in environmental studies. President Theodore Roosevelt convened a conference of governors, which ended in making conservation a major theme in government policy. Secondly, conservation studies were introduced in the American schools (Wheeler and Martin, 1975).

In 1913 an international conference for the protection of nature was set up in Basle but it was interrupted by the outbreak of the First World War in 1914 (Saveland, 1976:7). In 1916 the North America Migratory Bird Treaty was signed and the International Committee for Bird Protection was established in London in 1976. The year 1926 saw another two important events namely, the Vladimir Vernadsky Biosphere in the USSR, (Saveland, 1976:7) and the formation of the Council for the Preservation of Rural England by people who were concerned about the decline of farming and the increasing urbanization. The Council was formed mainly by naturalist, countrymen and left wings rustic philosophers (Wheeler and Martin, 1975).

The Commission for International Protection of Nature was established at Brussels in 1934. Another important contribution to

environmental studies was made by Cons and Fletcher's book published in 1938 and entitled "Actuality in the school". In this book, social aspects of the environment were emphasized. This contributed to children learning about other people. The establishment of the nature conservancy in 1949 in England was also significant for the ongoing development of environmental teaching. An event of great importance in the United Kingdom was the formation of the International Union for the Conservation of Nature (IUCN) under the leadership of Dr Cerovsky. The IUCN coined the term "Environmental Conservation Education".

The publication of the World Conservation Strategy (WCS) in 1960 and the formation of the World Wild Life Society (WWLS) in 1961 were further important events in this regard (Saveland, 1976:7; Vilgoen and Van der Merwe, nd; Wheeler, 1975:15).

The first recorded use of the term environmental education in Britain may be traced to a conference held in 1965 at Keele University, Staffordshire, with the purpose of investigating conservation of the countryside and its implications for education. This conference was significant for the UK in that it marked the first occasion where educationalists and conservationists established the Council for Environmental Education (CEE) in 1968.

The CEE was founded as a focus for organizations involved or concerned with environmental education and had three broad goals (Palmer, 1998).

These are the goals of the CEE.

- (a) Development: CEE aims to facilitate the theory and practice of environmental education.
- (b) Promotion: CEE aims to promote the concept of environmental education and facilitate its application in all sphere of education.
- (c) Review: CEE aims to monitor the progress of environmental education and assess its effectiveness.

Whilst the first attributed use of the term “environmental education” in the UK was in the 1965 Keele Conference, internationally it is claimed that it was first used in Paris in 1948 by Thomas Pritchard at a meeting of Nature and Natural Resource (Desinger, 1983). Wheeler (1975) suggests that the term first appeared in the book “Communitors”, by Paul published in 1947.

The Year 1970 was very important for environmental education. Firstly, it was the European conservation year. Secondly, the United State of America had a conference on environmental education that eventually led to a clear delimitation of the concept “environmental education”. Thirdly, the Duke of Edinburgh initiated a study conference with the theme “the countryside” in 1970 that was geared towards giving a common purpose to the conservation movement and to eliminate conflicting points of view. Fourthly, the environmental project was founded by the school council in England with the aim of exploring the relevance of rural studies in environmental education. Fifthly, the National Association for Environment Education (NAEE)

comes into existence. There was growing interest in outdoor education. The United Nations Environmental Programme (UNEP) that was established in 1972 gave impetus to environmental education (Johnson, 1980).

### 2.3 Environmental Education and Some Significant Gatherings

Some of the milestone conferences held on environmental education were as followed:

- (a) 1948: IUCN Conference, Paris. First use of term of Environmental Education.
- (b) 1949 Founding of IUCN.
- (c) 1965 First use of the term Environmental Education in UK.
- (d) 1968 United Nations Education Scientific and Cultural Organisation (UNESCO) Biosphere Conference Paris.
- (e) 1970 Founding of CEE UK.
- (f) 1972 UN Conference on Human Environment, Stockholm, Sweden.
- (g) 1975 Founding of UNEP/IEEP.
- (h) 1977 UNESCO First inter-governmental conference on Environmental Education, Tbilisi, USSR.
- (i) 1980 World Conservation Strategy (IUCN, UNEP, WWF)

- (j) 1987 UNESCO/UNEP Educational Congress on Environmental Education and Training was held in Moscow during the European Year of the Environment.
- (k) World Commission on Environmental and Development-Our Common Future-The Brundtland Report.
- (l) 1988 European Resolution on Environmental Education.
- (m) 1990 Publication of National Curriculum Documentation for Environmental Education in England.
- (n) 1991 Publication of Caring for the Earth, A strategy for sustainable living.
- (o) 1992 UN Conference on Environmental and Development – The Earth Summit.
- (p) 1996 Publication of Government Strategy for Environment Education in England (Palmer, 1998).

#### 2.4 Stockholm Conference

This conference was held in 1972. It was at this conference on the human environment that the UN for the first time organised government members at the highest level to come together and discuss the environmental situation. The conference was a landmark in that it indicated a degree of international unity in the recognition of, and concern about, the existence of environmental problems.

Evidence was presented at the conference to indicate that the environmental problems were not the sole problems of individual countries (Fenshem, 1976). The result of this was a plan of action that recognised the global nature of the problems. Education and training were seen as key supporting measure of this action plan.

The Stockholm conference marked one of the earliest attempts to give high profile to the importance of environmental education and succeeded in marking out environmental education as an area of concern and investigation. The conference redefined the nature of topics and issues with which environmental education should concern it self. Schools at the time focused upon environment related activities such as outdoor education programmes that tended to promote the principles of a liberal educational philosophy (Tilbury, 1994). The new problem based-environmental education greatly differed from the historically defined environmental studies that took place in schools at the time.

## 2.5 Belgrade Charter

Arising out of the Stockholm conference was the ten-day international environmental workshop in Belgrade, arranged by UNESCO-UNEP in 1975. Participants at the environmental education workshop in Belgrade, Yugoslavia, proposed a global framework for environmental education, referred to as the Belgrade Charter. The Charter was the first international statement to outline the objective,

concept and guiding principles for environmental education. It stated that the major purpose of environmental education was:

“to develop a world population that is aware of and concerned about the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively towards solution of current problems and the prevention of new ones” (UNESCO, 1976: 73).

The environmental education goal as defined at Belgrade goes beyond developing awareness and understanding of the environment by including the need to encourage a sense of active participation in the resolution of environmental problems. This is further re-enforced in the objectives outlined in the Charter. These objectives are:

- (a) Awareness: To help individuals and social groups acquire an awareness of the total environment and its allied problems.
- (b) Knowledge: To help individuals and social groups acquire a basic understanding of the total environment, its associated problems and humanity’s critically responsible presence and role in it.
- (c) Attitude: To help individuals and social groups acquire social values, strong feelings of concern for the environment and motivation for active participation in its protection and improvement.
- (d) Skills: To help individuals and social groups acquire the skills for solving environmental problems.

- (e) Evaluation ability: To help individual and social groups evaluate environmental measures and education programmes in terms of ecological, political, economic, social, aesthetic and educational factors.
- (f) Participation: To help individuals and social groups develop a sense of responsibility and agency regarding environmental problems to ensure appropriate action to solve these problems (UNESCO, 1976).

The Belgrade Charter also set the guiding principles for environmental education. It maintained that environmental education should:

- (a) Consider the environment in its totality - natural and man made, ecological, political, economic, technological, social, legislative, cultural and aesthetic.
- (b) Be a continuous lifelong process.
- (c) Be interdisciplinary in approach.
- (d) Emphasize active participating in preventing and solving environmental problems.
- (e) Examine major environmental issues from a world perspective.
- (f) Focus on current and future environmental situations.
- (g) Examine all development and growth from an environmental perspective.

- (h) Promote the value and necessity of local, national and international co-operation in the solution of environmental problems (UNESCO, 1987).

These guiding principles reinforced the interdisciplinary nature of environmental education identified in Stockholm. The Charter placed great emphasis on the interrelationship between conservation and economic growth and on environmental concerns being inseparable from other major global issues like poverty and development. The Belgrade Charter has become a major document on a global scale.

## 2.6 Tbilisi Conference

Two years after the Belgrade workshop, UNESCO held an environmental education conference in Tbilisi, Georgia. The Tbilisi conference was significant because it constituted a formal intergovernmental recognition of the importance of environmental education as defined in Stockholm. The Tbilisi Report built upon the Belgrade Charter and produced the following goals for environmental education:

- (a) To foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas.
- (b) To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.

- (c) To create new patterns of behaviour of individuals, groups and societies as a whole towards the environment.

This report also identified five categories of objectives for individuals and groups that should be acquired through environmental education:

- (a) Awareness and sensitivity to the environment and environmental problems.
- (b) Knowledge and understanding of the environment and environmental problems.
- (c) Attitudes of concern for the environment.
- (d) Skills to identify and solve environmental problems.
- (e) Participation for active involvement in solving environmental problems.

## 2.7 Rio Earth Summit

In June 1992, twenty years after Stockholm, the historic UN conference on environmental and development (UNCED) was held in Rio de Janeiro, Brazil. Over one hundred heads of states and governments, together with delegates from more than a hundred and seventy countries attended what proved to be the most ambitious conference to date (Palmer, 1998). The conference had attracted a great deal of media attention and thus unlike the previous conferences, the “Earth Summit” was held with greater public support and involvement. Yet, high public expectation of what this summit could achieve diminished as the world recession,

which peaked in the year of the summit, reduced political confidence reinforcing government economic policy. The result was that world leaders were reluctant to make the necessary major environmental changes (Porritt, 1992).

Nevertheless virtually all who attended pledged to preserve the endangered planet by signing a weak but legal agreement on protecting biodiversity, a treaty on climate change and Agenda 21. Agenda 21 is an 800-page action plan which aims to change consumption patterns in the rich North and population growth in the South, combat climatic change, deforestation, desertification and drought, manage waste and sewage and protect the oceans. The Agenda placed great emphasis on “sustainable development”, the term that was given currency by the World Conservation Strategy (IUCN/UNEP, WWF, 1987) and the Brundtland Report (UNCED, 1997). It refers to the need for reconciliation between economic development and environment conservation. It interpreted sustainable development as the new focus of environment education in the 1990s. Section VI, Chapter 4 of Agenda 21 is of direct relevance to environmental education. In this section entitled “Education Public Awareness and Training”, the Tbilisi Declaration is seen as providing the fundamental principles for the proposal of UNCED.

Three separate programme areas were identified by Agenda 21.

These called for:

- (a) Re-orientating education towards development.

(b) Increasing public awareness.

(c) Promoting training.

The first programme promoted the inclusion of environmental and developmental education, linked to social education, from primary school stage through to adulthood. It also gave emphasis to the need for further training in decision making at all levels.

This programme also proposed that, "Government should strive to update or prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels within the next three years" (UNCED, 1997).

It called for a thorough review of the school curriculum to ensure that a multidisciplinary approach was adopted towards environment and development issues and their socio-cultural elements. Furthermore, it promoted the development of interdisciplinary research and development in environment and development programmes.

The second and third programmes called for more support for education training and public awareness activities relating to environment and development. The emphasis throughout the document was on increasing public awareness as a basis for action. It aimed to promote a sense of personal environmental responsibility and greater motivation and commitment towards sustainable development amongst the general population. It was the people participation as an essential part of environmental protection and sustainable development that above mentioned conferences emphasized. Chapter

25 of Agenda 21 envisaged the participation of the children and youth for successful development through environmental education. It is imperative that youth of all parts of the world participate actively in all relevant levels of decision-making because it affects them and has implication for their future. The objective of Agenda 21 is that each country should by 2000 ensure that 50% of its youth are enrolled or have access to appropriate secondary education or equivalent education or vocational training programmes (Johnson, 1993).

Chapter 36 of Agenda 21 states that education, including formal education, public awareness and training should be recognized as a process by which human beings and their society can reach their fullest potential. This actively should be achieved within three years, thus placing burdens on the governments to strive to update or prepare strategies aimed at integrating the environment and development into education.

## 2.8 Summary of Development of Conferences

The Stockholm Conference marked international unity in the recognition of and concern for global environmental problems and was the first to highlight the important role environmental education can play in improving the environmental predicament. It also called for a new outlook into the spiritual and physical relationship of the planet.

Belgrade gave substance to environmental education by outlining goals and the key characteristics of the discipline in its internationally agreed Charter. It also served to highlight the link

between socio-economic development and the environment. This document strongly supports the profile of environment education.

Tbilisi constituted a more formal inter-government recognition of the importance of environmental education as defined in Stockholm. It gave strong impetus to environment education and chartered the nature and development of environmental education. The Earth Summit saw the Tbilisi declaration and recommendation as fundamental to any environmental education curricula. It highlighted the importance of public participation in the resolution of environmental problems. Most importantly, preservation sees “sustainable development” as a central concept of environment education.

## 2.9 Environmental Education in South Africa

In South Africa environmental education has a history of at least 14 years. Past policies for its inclusion in formal school curriculum were limited by a lack of broad participation and the top-down fragmented curriculum development approaches followed by the previous education department (Does, 1995). The agenda for social change and social transformation has been prominent within the development of environmental education in South Africa over the past 14 years. (Ramphela and McDowell, 1991) describes the focus on change in the country as a narrow focus on the political change as the prime concern during the transitional period.

According to (Ramphela and McDowell, 1991) in South Africa environmental education emerged as a response to unique and complex socio-political environmental issues caused by modernization and apartheid. Together with the social, economic, and educational marginalization of the majority of the country's people and the concomitant struggle for social justice, equality and a non-racial, democratic future characterized the context in which the shift in environmental education have taken place. Environmental education assumed its place together with conservative policies that were insensitive to the needs of disadvantaged communities.

According to Irwin (1982) environmental education in the modern idiom first reached South Africa in the early 1970s prior to this effort has been concentrated largely on education (with apparently limited success) about soil-erosion, and what was termed until the late seventies "Conservation education". Conservation education as a movement tended to concentrate on conservation as the wise use of natural resources and basic ecology, and seldom concerned itself with the political, social or even the built environment.

Today conservation education continues to constitute a significant and integral part of environmental education. In 1946 the Social Conservation Act was passed to ensure conservation protection and improvement of the land (Hurry, 1987 and Toombs, 1990). This Act was subsequently replaced by the conservation of Agricultural Resources Act in 1983 (Hurry, 1987). Another significant development in the history of conservation education in South Africa was the South

African Region Commission for the Conservation and Utilization of the Soil (SARCCUS) (Irwin, 1982) in the wild life society of South Africa.

The first international conference on environmental education in South Africa took place at the initiative of Treverton College at Mooi River in Natal in 1967. This five-day conference, which had representatives from four continents, was a landmark in South Africa's environmental education. It was the first time that a wide spectrum of South Africans concerned with environmental education issues had come together to discuss common worldwide fund for Nature.

The Treverton conference ended in another yet important development namely the establishment of the Environmental Education Association of South Africa (EEASA) (Council for the Environment, 1984). The EEASA offers services to the council on the environment in any way possible. It also provides advice in connection with environmental education programmes.

Four of the most stimulating topics on environmental education were:

- (a) Definition, goals, principles and scope of environmental education.
- (b) Environmental education in formal education.
- (c) Non-Formal interpretative environmental education.
- (d) Non-Formal awareness regarding environmental education.

(Interim Education Committee, 1984)

The science education centre convened a conference at the Funda Centre in Soweto. Representatives of environmental awareness groups from all over South Africa met to discuss strategies for incorporating environmental education into current school syllabuses (Hart, 1989).

#### 2.10 The Roles Played by the Education Departments

- (a) The Transvaal Education Department established an environmental awareness centre near Middleburg in the Mpumalanga Province and purchased twelve farms to be used for "Youth Preparedness Programmes" (Irwin, 1982).
- (b) The Kwazulu Natal Education Department runs regular camps for environmental education activities and supported private organisations actively involved in environmental education (Irwin, 1982). The Department of Education established a programme known as the "Land Service Movement" aimed at creating environmental awareness and introducing children to rustic crafts. The main objectives were the conservation, utilization and development of our country's natural resources, its culture and its human potential (Hurry, 1987).
- (c) The Orange Free State Education Department started presenting a number of conservation courses with the assistance in the Province of the Nature Conservation Division. The Cape Education Department supports and runs conservation programmes on its own and also in co-

operation with the Nature Conservation Division in the Province (Irwin, 1982).

(d) The Department of Education and Training involved itself in environmental education by operating the “Habit Clubs” and was also deeply concerned with conservation (Irwin, 1982). The South African Nature Foundation (SANF) plays a significant role as well. The Wild Life Society of South Africa made the first attempt in South Africa to develop a national environmental policy and strategy (Council for the Environmental, 1990). The need for environmental and conservation education has been realized by the various parks and nature divisions in South Africa that later included their own projects and programmes while co-operating with the provincial Education Departments (Irwin, 1982).

### 2.11 Current National Education Policy

The Department of Education has been slow to take the challenge to support environmental education curriculum development in schools. It was through the ongoing lobbying called Environmental Education Policy Initiative (EEPI) and later the Environmental Education Curriculum Initiative (EECI) that the environmental education became an integral part of Curriculum 2005 in 1997.

In 1997, the Human Science Research Council (HSRC) undertook to support a national curriculum research initiative. These

projects encouraged educators to research the environmental education material projects. The EECEI established working groups focusing on learning programmes and develop research material for teacher's education. Many provincial education departments have been reluctant or unable to run programmes to support teachers with environmental education. Many policies in South Africa strongly support the protection of all citizens against environmental degradation. A number of recent government policy documents refer to the need for environmental education in order to achieve sustainable development in South Africa. In addition the new Constitution of South Africa (1996) enshrines the right of every citizen to an environment that is not detrimental to his/her health. To achieve this, many environmental issues that the people of this country face will have to be addressed through:

- (a) Prevention of further environmental degradation.
- (b) Solving of environmental issues and problems.
- (c) Development of suitable standards of living among all South Africans.

According to the Republic of South Africa, 1997 Environmental and Management policy, amongst the seven identified strategies goals, goal number five deals with empowerment and environmental education. This goal is set to promote education and empower South African people, and to increase their awareness of and concern for environmental issues. It states that environmental education can help

people to develop knowledge, skills, values and the commitment necessary to achieve sustainability for future generation. This indicates a significant change in the South African educational system, most importantly to the environmental education community.

It emerged as early as 1980s that the environmental education community advocated the introduction of environmental education as part of the curriculum. In 1985 those who were involved in environmental education formed the Environmental Education Association of South Africa. In 1989 the Department of Environmental Affairs and Tourism develop a White Paper on environmental education. This drew attention to capacity building and holistic integration of environmental concern into all forms of education and awareness programmes.

## 2.12 Environmental Education in the Formal Sector

Environmental education in the curriculum data gathered by ECSA (Education Communication for Sustainability in Africa) in 1995 revealed that formal schooling appears to be characterized by inadequate resources in all areas including policy formulation. Teachers are not equipped with the necessary knowledge and training material to teach environmental education in South Africa. This is likely to influence all education programmes including environmental education (Lotz-Sisitka, Irwin, Euvrard, and van Rensburg, 2000).

In March 1997 the Ministry of Education launched a new outcome based Curriculum 2005 for the general education and

training sector. This marked an end to the education system of the past and introduced a new learning in South Africa. Teachers and learners are now faced with many changes in the teaching and learning process. This change provides the framework for a new Curriculum for schooling and adult basic education and training (ABET).

Internationally Outcome Basic Education (OBE) is based on an optimistic philosophy rooted in a success for all ideology which aims to enable formal education to produce skilled people for development and economic planning that encourage teachers to develop learning programmes.

### 2.13 Summary

This chapter give a clear understanding regarding environmental education both nationally and internationally. It also highlighted various strategies adopted to address the struggle for environmental education both in First and Third World countries. The next chapter will focus on the methods and procedures that were employed to collect data needed for the study.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Introduction

This chapter presents the research techniques used in the study. This chapter is structured as follows: The first part deals with the secondary sources used, the second with, survey methods apply in the study and third, interview schedule employed. Finally data presentation techniques and data analysis techniques are discussed.

#### 3.2 Secondary Sources

According to (McMillian, 1993) secondary sources are the records or testimony of anyone not an eye witness to or participant in the event. They contain history based on other primary and secondary sources. These sources provide insight and possible facts for analysis. The researcher utilised articles from journals, literature and Internet. Literatures from library books dealing with environmental education were utilized.

The researcher wanted to achieve the following: firstly, the historical development of environmental education from the Pioneers such as Geddes, Palmer Rosseau, Pestalozzi, Froebel and Dewey; secondly, to check what the other countries are doing with regards to

environmental education; and thirdly, to establish what is South Africa doing with regards to environmental education. Whether Curriculum 2005 is different as compare to other countries. Finally to consolidate ideas about environmental education in relation to what is happening in secondary schools ideas about environmental education. After the information was collected the researcher synthesized the relevant details into his discussion about environmental education.

### 3.3 Survey Research Methods

The survey research methods are the most important methods for data collection because they ensure that sound information can be collected. A small sample can be used to generalize about a large population (De Vos, 1998). Survey research methods make use of questionnaires as data gathering tools.

#### 3.3.1 Questionnaire

A questionnaire is an instrument with open and closed questions or a statement to which respondents must react (De Vos, 1998). The questionnaire is designed to make sure that the objective of the study is adequately measured and the relevant information is gained. Both closed and open-ended questions were used for their many advantages: First, they give respondents freedom to express their views and allow more information to provide answers. Moreover, if the answer to open ended questions was unclear, it was possible to probe the respondents to explain further. Therefore open-ended questions were very important in this study, because they enabled the

interviewer to clear up confusion. Closed questions were used where the respondents were provided with answer and had to choose the one that represent their views.

### 3.3.2 Questionnaire Design

The questionnaires were structured along the following lines:

- (a) The researcher first consulted relevant literature dealing with environmental issues from libraries.
- (b) The views of Mrs Ranjini Pillay, the Chief Education Specialist National Environmental Education Programme Co-ordinator for Gauteng was utilized see (Appendix C).
- (c) The questionnaire was kept short to avoid the wasting of learners' time.
- (d) The questionnaires were answered anonymously in order to allow the respondents to express their personal views about environmental education in secondary schools.

### 3.3.3 Questionnaire Arrangement

Questions were arranged as follows:

#### (a) Section A: Demographic information

This section dealt with personal information about the learners. It is important to know the age of learners when drafting the strategy for environmental education in the curriculum in order to determine a suitable strategy for the learners' age.

#### (b) Section B: Learner's subject preferences

Here the focus was to establish which subjects are preferred by most of learners in secondary schools. The most preferred subject will give an indication as to whether learners are interested in environmental issues. For example a strong preference for Biology, Geography or Agriculture will suggest that the learners are interested in environmental issues.

(c) Section C: General ideas about Environmental Education

The study wanted to establish whether learners had environmental education in their schools, and if not, why not?

(d) Section D: Governmental legislation with regards to Environmental Education.

Here the focus was to establish whether learners know about government legislation on environmental management. What are their opinions, perception and attitude with regards to environmental education?

(e) Section E: Social Activities with regards to Environmental Education

This section was to establish what social activities do learners engage in most during their free time.

(f) Section F: Environmental Sensitive Areas

The focus here was to establish whether learners

know about the game reserves. This knowledge is important in order to develop field trips for learners in secondary schools.

#### 3.3.4 Data Required from Questions

- (a) The data required from the questions centred on environmental awareness in secondary schools. The aim was to establish the knowledge of environmental education amongst the learners.
- (b) The status of environmental education in secondary schools. What are their opinions, attitudes and beliefs with regards to environmental education in secondary schools?
- (c) Governmental opinion with regards to environmental education. What are learners' views towards the usage of plastic bags?
- (d) Data on social activities was required to establish how the learners spend their leisure time.
- (e) Knowledge of environmentally sensitive areas was required to establish whether learners know where wild animals such as the big five are found.

#### 3.3.5 Questionnaire Administration

The intention of the researcher was to administer the questionnaire himself, but teachers offered to assist in implementing the questionnaires to learners. Six teachers and six principals were involved in this study from six different schools in Diepkloof and Orlando East. Teachers explained the purpose of the questionnaires to the respondents so as to dispel suspicion and to obtain their full co-

operation. The questionnaires were to be answered anonymously. The names of the schools were left out. Actions that could cause resistance such as sharing of information amongst the respondents were avoided in order to ensure return of the questionnaires. The teachers collected the questionnaires from the respondents.

### 3.3.6 Sampling Procedure

Stratified sampling was adopted in this study. The target population was made up of learners, teachers and principals. The researcher opted for this procedure because the target population is divided into subgroups (McMillian, 1993). The sample of learners was taken from Grades 10,11 and 12. The reason for choosing these grades was as follows. It would have been impractical and impossible to include all the secondary school learners within the framework of this study. The respondents were from six schools in Diepkloof and Orlando.

The total population of learners between grades 10-12 for all the schools was 900. Then the sample size was 20% of the 900 of the population. The total sample of all schools was 180. Ten learners from each grade in each school were given a questionnaire to complete. The ten were selected randomly. In each school one teacher was selected for this study. The criterion that was used to select the teachers was whether they taught Guidance or any subject related to environmental education such as Biology, Geography and Agriculture.

All those selected were interviewed. The principals of the six schools were also interviewed.

### 3.4 Interview Schedule

The interview schedule was also used to gather data for the study. (Bless & Higson-Smith, 1997) define interview as an important element of research involving personal contact with the participants who are used to answer questions. In this study structured interviews were used to gather information from respondents (educators and principals). Discussion or exchange of ideas is an important part of data collection of social research. The reason why the interview technique was used is that interviews provide information and give the opportunity to the respondents to express their views based on personal experiences. Personal information, attitudes perception and beliefs can be obtained (Neuman, 1997). The reason for using interview was to explore the teachers and principals' insight with regards to environmental education in schools.

#### 3.4.1 Formulation of Interviews

In formulating the interviews the following steps were taken into consideration:

(a) Appointments with the interviewees were made in advance.

Time and place for the interviews were arranged.

(b) The purpose of the interview was explained as being academic.

- (c) The interviewees were assured that interviews with them were important as they could contribute to knowledge address controversial issue in the past about environmental education.

At the beginning of the interview, the researcher stated clearly the purpose of his visit. Some basic biographical information about the interviewees like surname, place of birth, age, period of residence in the particular area was sought. The researcher allowed the interview to develop freely by listening carefully while responding sensitively to the comments. Throughout the interview the researcher avoided taking a particular point of view that might have started an argument or prevented the interview from continuing. The time taken by the interviewee did not exceed an hour. Towards the conclusion the interviewee if she/he wished to add or state any other information.

### 3.5 The Interviewing Procedure

The interviews were conducted to establish the following:

- (a) Whether teachers and principals do have environmental education in their syllabuses.
- (b) To determine whether teachers have training and qualifications to teach environmental education in secondary school.
- (c) To establish whether teachers and principals do have programmes in their schools in relation to environmental education.

### 3.6 Data Presentation and Analysis

Tables and graphs were used to present the data. Mines & Huberman (1984) say that problems are encountered when it comes to data analysis because there is always a lot of data to deal with. The Microsoft Excel was used to generate tables and graphs. The respondents' strata were categories into three to make data analysis simpler.

- (a) Category 1 represents learners.
- (b) Category 2 represents the teachers.
- (c) Category3 represent the principals.

### 3.7 Summary

This chapter outlines the research methodology used in the investigation. This help in giving an insight to the different that, have been undertaken to collect the data collected. The data is interpreted in the next chapter.

## CHAPTER 4

### DATA PRESENTATION

#### 4.1 Introduction

In the previous chapter, the research techniques used in the data collection were explained and justified on the basis of their relevance to the nature and purpose of this study. This chapter deals with data collected from various sources, as explained in Chapter Three. Various data presentation techniques are used in Chapter Four. To maintain focus on specific research questions set at the beginning of this thesis, the data are presented under different sub-headings according to the sub-themes of this research.

#### 4.2 Demographic Profile of School Learners

Data on the demographic profile of learners were collected, the purpose being to understand the extent to which demographic characteristics of learners influence their perceptions and understanding of environmental issues. Demographic information collected in this research was limited to the age and sex of the sampled learners to whom questionnaires were administered.

Table 1. Age-Sex Distribution of Sample Learners

Age	Female	Male	Total
16	5	4	9
17	4	10	14
18	8	19	27
19	15	13	28
20	17	12	29
21	10	13	23
22	14	10	24
23	7	7	14
24	10	2	12
Total	90	90	180

Table 1 shows that for the research project 180 learners in total were assigned questionnaires, of which 90 were female and 90 were male. From the data obtained, it transpired that the ages of the learners that answered the questionnaire ranged from 16-24 years. These different age groups are spread over three grades (Grade 10-12).

The Table also presents the different numbers of learners questioned in each age group. The researcher used the different sex groups in order to obtain environmental awareness of learners. Average

#### 4.3 General Ideas about Environmental Education

An environmental education question was asked to determine learners' knowledge about environmental education. The purpose was to establish a clear basis of whether learners are exposed to environmental issues.

Table 2. Knowledge of Environmental Education

Learners knowing	Not knowing	Total
72	108	180

Table 2 specifies clearly that 72 out of 180 learners know about environmental education while 108 of the learners do not know anything about environmental education. Plate 1 depicts learners standing in the school premises ignoring the litter around them. The implication of this will be further discussed in the following chapter.

**Plate 1. Lack of Environmental Consciousness by Learners**



Plate1 depicts learners standing on one of the school premises while papers are scattered all over the school's ground.

**Table 3. Learners Having Environmental Education in their School**

Learners believe they do have environmental education	54
Learners believe they do not have environmental education	126

Table 3 reveals that the majority of learners do not have environmental education as an independent subject. There was no provision for environmental education in the previous curriculum,

though it was integrated in other subjects, which dealt with environmental issues such as Biology, Geography and History. The learners did not know that it could exist as an independent subject. A minority indicated that they do have environmental education in the curriculum. It appears that schools offer very limited opportunities for learners to learn about the environment. Plate 2 illustrates this.

**Plate 2. Animal Eating Garbage Next to a School**



Table 4. Subject Preferences

Subjects	Female	Male	Total
Geography	20	25	45
History	13	16	29
Biology	14	13	27
English	15	15	30
Zulu	12	12	24
Afrikaans	7	5	12
Accountancy	4	2	6
Mathematics	5	2	7
Environment Education	0	0	0
Total	90	90	180

Table 4 indicates school subjects preferred by learners. It is very important to know the subjects the learners prefer because it gives insight to the development of environmental education. The majority of learners preferred Geography. This confirms the problem statement

that the only fields where environmental education can be found are subjects such as Geography, Biology and History. Environmental education as a subject does not exist in all the secondary schools involved in this research project.

Table 5. Learners Accept the Change to Curriculum 2005

Yes: it is good	108
No: it is not good	72

The learners were exposed to the old educational system, they were asked to compare the strengths and the weaknesses of the old and the new educational systems. Table 5 indicates that the majority of the learners support the change to the new curriculum. Their reasons of supporting the change in curriculum are as follows:

- (a) It will improve skills and development of the learners.
- (b) Change will occur outside formal schooling.
- (c) Youth and adults will benefit from this new system.
- (d) It will promote creativity through practical courses, unlike before where an emphasis in the learning process was more on memorization.

(e) It will give satisfaction and fulfilment to studying.

A minority felt that the change is not a good idea because they are not certain about the out come that the Curriculum 2005 might bring in their studies.

Plate 3. Learners in the Classroom Situation



This plate illustrates the seating arrangement in a typical classroom and suggests that teaching is still teacher centred rather than learner centred.

#### 4.4 Government Opinion on Environmental Education

Governmental opinion on environmental education here refers to the government's proposal with reference to environmental education

in schools. For example, the Minister of Environmental Affairs and Tourism proposed that people should stop the usage of plastic bags because plastic bags are environment unfriendly and they do not decompose at all in the ground.

Table 6. Views on the Usage of Plastic Bags by Learners

Agree that plastic bag should be used	72
Disagree that plastic bag should be used	108

Table 6 shows the learners' opinions on the usage of plastic bags. The majority of learners do not support the Minister's proposal on the grounds that it will increase the unemployment rate because there are many people working in those sectors that produce plastic bags.

A minority of learners felt that it is a good idea to ban plastic bags, because plastic bags are not biodegradable. There is a need to teach learners about the impact of plastic bags. This might be done through environmental education as a strategy for the utilization of environmental resources.

#### 4.5 Environmental Sensitive Areas

Environmental sensitive areas refer to protected areas such as game reserves or zoological garden' where animals occur.

Table 7. Learners' Preference for Habitat of Wild Animals

Game Reserve	149
Zoo	31

The table above indicates learner's preferences for habitats of wild animals. It was noted that majority of learners prefer to go to the zoo rather than to a game reserve. The reason for this according to the learners is that game reserves are far away from their homestead as compared to the zoo. A financial constraint is another problem, as most of the learners have no means of going to see wild animals in game reserves. Therefore, they find it difficult to get access to game reserves. Learners would like to visit game reserves in order to learn more about wild animals and their relations to one another, their feeding cycle and their habitat in the ecosystem.

Table 8. Learners' Recommendations of Parks for Game Viewing

Kruger National Park	60
Pretoria Zoo	45
Johannesburg Zoo	30
Pietermaritzburg Lion Park	9
Not to my knowledge	36

The table above shows that the majority of learners would recommend Kruger National Park, Pretoria Zoo, and the Johannesburg Zoo whilst only nine learners recommend Pietermaritzburg Lion Park for game viewing. Thirty-six learners did not have knowledge about protected areas for wild animals and game viewing in South Africa.

Table 9. Frequency of Visit to the Zoo

Once	Twice	Several Times	Never
24	78	54	24

The table above illustrates visitation to the zoo. Seventy-eight learners stated that they visited a zoo twice in their lifetime. Fifty-four learners indicated several times. Twenty-four learners stated once and finally a group of twenty-four learners said they never visited zoological gardens in their lifetime although they will like to see some wild animals one days.

The table above illustrates that majority of learners will be sad, if they never get a chance to go to a zoo. The rest of the learners did not mind about whether or not they visited, a zoo.

#### 4.6 Social Activities

Social activities refer to the kinds of entertainment linked to environmental education that learners engage themselves in during their leisure time.

Table 10. Learners' Social Activities in their Free Time

Listening to music	72
Reading	45
Climbing trees	12
Running along the beach	24
Walking through the bush	27

The table above shows that the seventy-two learners prefer listening to music, forty-five learners favour reading books, nine learners prefer climbing trees, twenty-four learners favour taking a walk through the bush, and twenty-seven learners regard running along the beach as their form of entertainment. In essence, the majority of learners spend most of their leisure time listening to music and reading books, rather than engaging in environmental related activities.

Table 11. Choice Preferred between Cinema or Dolphinarium

Cinema	120
Dolphinarium	60

The table indicates that the majority of learners prefer to go to the cinema rather than to the dolphinarium.

Table 12. Preferred Visits: Lost City versus Drakensberg Mountain

Lost City	57
Drakensberg Mountains	123

The table illustrates that the majority of the respondents prefer to go to Drakensberg Mountains rather than Lost City. The learners revealed positive attitudes towards matters concerning the natural environment. The only problem is these have not been developed to their fullest potential. Teachers can play a crucial role in educating learners about the importance of the environment, for example by conducting field trips to places such as Drakensberg mountains where learners can explore the natural environment.

The responses by the learners show that they have never been exposed to environmental education in their schools. It can be stated that there is still a great challenge awaiting environmental education in Soweto secondary school.

#### 4.7 Teachers' Responses to Environmental Questions

In order to establish the level of knowledge about environmental education the following were the teachers' responses.

- (a) With regards to environmental education six out of the six teacher respondents stated that they do not offer environmental education because it was not part of their training. They only offer subjects such as Biology, History and Geography as well as projects organized by Eco-Warriors, for example, Soweto's Operation Littering Big Tree.
- (b) Relating to the change to Curriculum 2005, five out of the six respondents indicated that it is a good idea to have Curriculum 2005 because it is more practical and takes the learners' environment into consideration. The only problem with the Curriculum 2005 is that not enough training is provided before it was introduced. The teacher respondents indicated that it is difficult to do macro-planning and to implement the Outcome Based Education (OBE). One of the six respondents was not sure whether the curriculum would address the question of environmental education effectively in secondary schools.
- (c) Four out of the six respondents indicated that the problems of offering or teaching environmental education on its own are as follows:
  - i. The school district has not introduced it.

- ii. Lack of proper resources or material.
  - iii. Teachers training centre did not offer environmental training.
- (d) Four respondents out of the six pointed out that teachers were not properly training in their respective institutions and colleges to teach environmental education in secondary schools.
- (e) Six out of the six respondents indicated that the lack of environmental education can be seen through serious environmental problems such as littering. The reason may be that learners do not share common goals of a clean environment.
- (f) All six respondents agreed that a possible solution to address the problem arising from lack of environmental education in schools might be to form co-operatives with other institutions dealing with environmental education. The temporary workers should be employed to clean up and improve the conditions of schools. Principals should also try to involve community members in managing the environment.
- (g) Six out of the six respondents indicated that they never had any environmentalists or agricultural extension officers coming to conduct workshop, seminars and conferences on environmental education at their schools.

- (h) Two out of six the respondents indicated that they do not have environmental campaigns in their schools. They indicated that they only observe events such as Arbour Day; while four out of the six respondents highlighted that they do have environmental campaigns such as tree plantings, flower planting and cleaning campaigns.
- (i) With regards to teaching of environmental education, six out of the six respondents stated that they do not deal with the issues of environmental education effectively and efficiently. They only teach it as a subsection of subjects such as Geography, History, Biology and Agriculture.
- (j) In relation to the implementation of environmental education, six out of six respondents felt that it should start from the lower primary classes to post-matriculation.
- (k) Three out of the six respondents indicated that schools are following the policy designed by the Department of Education. This policy does not take into consideration environmental education in schools as an independent subject.
- (l) Five out of six the respondents' felt that the education system did not take into consideration environmental education as a critical aspect on its own. The Department of Education should institute it and make it an independent subject in the curriculum. Teachers

can have a positive role in influencing environmental education in schools by getting appropriate training under the new OBE.

It is evident to the researcher that teachers seem to have little understanding of environmental education. The responses by the teachers reflect that no environmental issues have been tackled practically and theoretically in a form of discussion.

#### 4.8 Principals' Responses to Environmental Questions

In order to establish the level of knowledge about environmental education the following were the principals' responses.

- (a) Six out of the six principals who were interviewed indicated that they do not have environmental education as an independent subject. The reason was that it was not part of the school syllabus prior to 1994. Presently they have what is called Human and Social Science (HSS), which is a new learning area that incorporates subjects such as History, Geography, Biology, Environmental Studies and Health Education. It started in Grade 8, in the year 2001. It was introduced through the introduction of Curriculum 2005.
- (b) Four out of the six respondents felt that the change to Curriculum 2005 would indeed increase number of issues discussed under environmental education. In the past other subjects subordinated it. Two out of the six respondents were

not sure that Curriculum 2005 would address the issues of environmental education adequately.

- (c) The most serious environmental problem faced by schools is littering. Everyday after lunch the learners together with the teachers pick up papers.
- (d) Six out of the six respondents indicated that no environmentalist visited their schools to conduct workshops, seminars and conferences about the significance of environmental education.
- (e) Four out of the six respondents indicated that they do have little environmental campaigns in their schools, for example, tree planting and cleaning campaigns. Two out of the six the respondents stated that they do not have such campaigns. They have only events such as Arbour Day, which is celebrated internationally.
- (f) Six out of the six principals indicated that they have lessons on environmental studies in subjects such as Geography that deals with issues such as pollution, and Biology, which deals with ecological processes and the movements of nutrients.
- (g) Six out of six the respondents felt that the Gauteng Department of Education should make provision that environmental education becomes a separated subject and be integrated as part of other subjects.

- (h) According to the six principals the reason why teachers are not able to teach environmental education can be attributed to the fact that it was not part of their training in colleges.
- (i) Five out of the six respondents indicated that the problems that hinder implementing environmental education, as an independent subject was the legacy of the past. Curriculum 2005 was introduced in the Year 2001 and only Grade 8. One out of the six respondents indicates that there are no obstacles to teach environmental education in schools. Colleges and universities should prepare teachers to teach environmental issues.
- (j) Four out of the six respondents express the view that principals should play a leading role in ensuring that teachers go for in-service training in order to gain additional knowledge with regards to environmental education. Two of six the respondents stated that they could only influence the process by linking teachers with environmental programmes.
- (k) The six respondents indicated that there are no programmes in place to infuse environmental considerations into the behaviour and actions of teachers and learners to stimulate them to take initiatives of their own.

The responses given show that principals are not conversant with environmental education. They also have limited knowledge of environmental education. Initiations of programmes that are

environmental related in school are invisible. There is therefore little chance for the principals' to pursue and insist that environmental education is implemented.

#### 4.9 Summary

In this Chapter data gathered from 180 learners, six teachers and six principals has been presented. The responses by the learners show that they have never been exposed to environmental education in their schools. It can be stated that there is still a great challenge awaiting environmental education in Soweto secondary school. The teachers seem to have little understanding of environmental education. The responses by the teachers reflect that no environmental issues have been tackled practically and theoretically in a form of discussion. Teachers needs special programme that provide information about the obtainability of different environmental education resources

The responses given show that principals are not conversant with environmental education. They also have limited knowledge of environmental education. Initiations of programmes that are environmental related in school are invisible. There is therefore little chance for the principals to ensure that environmental education is implemented.

The next chapter is devoted to data analysis and discussion. In order to examine what is the cause of lack of environmental education in secondary schools. Thereafter the researcher tries to come up with

the ways to address the deficiency of environmental education in schools.

## CHAPTER 5

### DATA ANALYSIS AND DISCUSSION

#### 5.1 Introduction

The purpose of this chapter is to analyse and discuss the data obtained from the learners, teachers and principals. Only Grade 10, 11 and 12 learners were involved in this research project.

#### 5.2 General Ideas about Environmental Education

##### 5.2.1 Knowledge of Environment Education

A question was asked to determine the learners' knowledge about environmental education. Thereafter recommendations for the adoption of environmental education in secondary schools could be made. The results are shown in Figure 2.

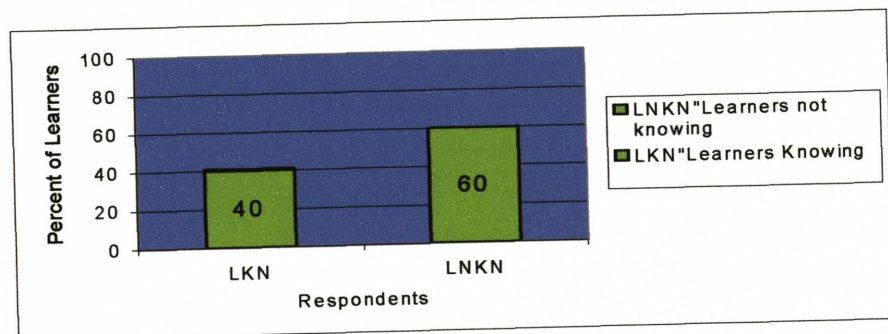


Figure 2. Knowledge of Environmental Education

Sixty percent of respondents do not know about environmental education. Only forty percent of the learners have knowledge about environmental education. The reason for the differences in these percentages is that some learners in Grade 8 were taught environmental awareness during the guidance period. The guidance period helps learners to appreciate moral and social values of the environment. Issues such as environmental pollution, damage of the ozone layer and threats to the future of the planet are dealt with in this subject. However the problem with this subject is that the emphasis is more on definitions of concepts rather than giving learners an insight in environmental education.

The majority of learners did not receive any lessons in environmental education. The implication is that there is a serious problem with regard to teaching of environmental issues in secondary schools. Environmental education inevitably still enjoys a lower status than other subjects such as Biology, Geography and History within Curriculum 2005. Its meaning and position within education has not been clearly defined.

#### 5.2.2 Environmental Education as a Subject in Schools

A question was asked to establish whether schools under investigation do have environmental education as a subjects. Figure 3 illustrates the results.

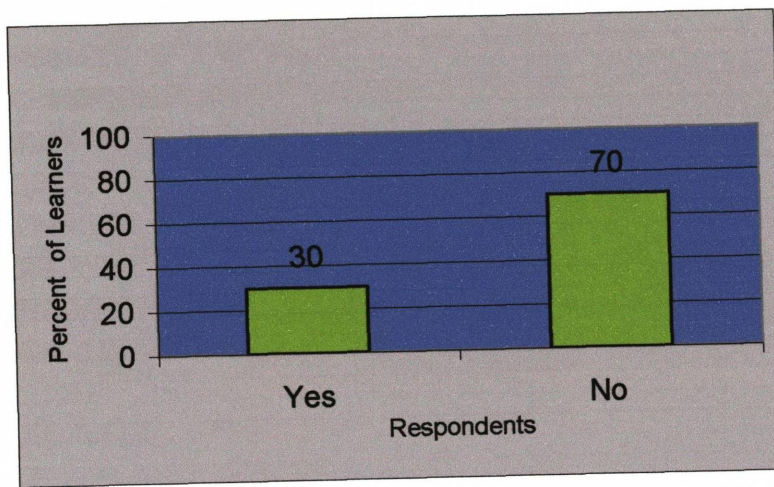


Figure 3. Learners Having Environmental Education in their Schools

Figure 3 illustrates that seventy percent of the learners do not have environmental education as an independent subject in their school. However, environmental education is incorporated in other subjects. Only thirty percent felt that they have environmental education in their school curriculum; this indicates clearly that there is a problem with regard to environmental education. Caduto (1984) states that if schools are to be successful in influencing learners to be social and environmentally responsible people, government will need to conceive, develop and implement a comprehensive environmental education programme as part of the general education. UNESCO (1985) maintains that the full incorporation of environmental education into the curriculum demands a realistic and practical renewal of an education system to educate learners.

### 5.2.3 Learners' Attitude about Curriculum 2005

The question asked here was designed to determine whether learners' accept the change to Curriculum 2005. The results are illustrated in Figure 4.

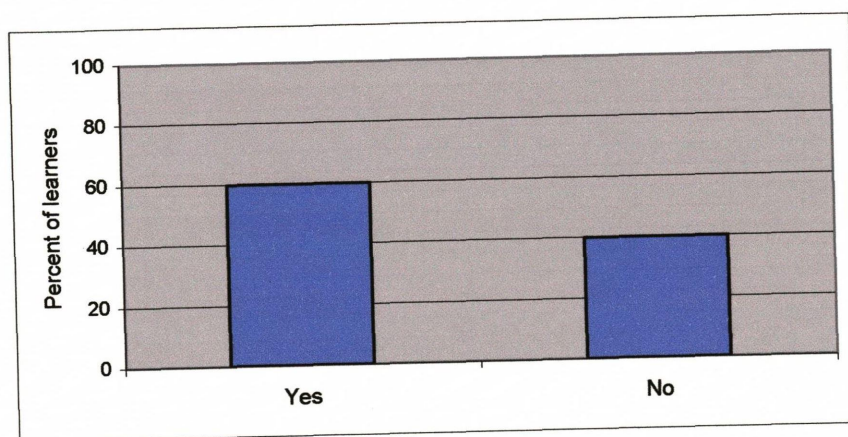


Figure 4. Learners Accept the Change to Curriculum 2005

Figure 4 indicates that sixty percent of the learners accept the change to Curriculum 2005, since they believe that the new curriculum will be based on the principle of co-operation, critical thinking and social responsibility. The other reason is that it will empower learners to participate in all aspect of environmental politics that were denied them in the previous educational system. New, flexible and appropriate curricula will cut across traditional division of skills and knowledge. The emphasis will be on what learners should able to do at the end of a course. Environmental education should be given the place it deserves. This is further supported by Ledger (1984) that the important issue in school is the co-ordination and integration

of environmental education in the curriculum. Only forty percent thought that Curriculum 2005 would not be a success. This implies that the majority of learners think that Curriculum 2005 will be successful.

### 5.3 Government Opinion on Environmental Education

These questions were asked in order to determine the level of learners' sensitization to and motivation in participating in environmental programme. It relates to one of the sub-problems, that is, "The lack of environmental consciousness seems to increase environmental degradation". The results of these are shown below.

#### 5.3.1 Usage of Plastic Bags

The researcher wanted to establish whether learners are environmentally friendly with regards the usage of plastic bags. The results are illustrated in Figure 5.

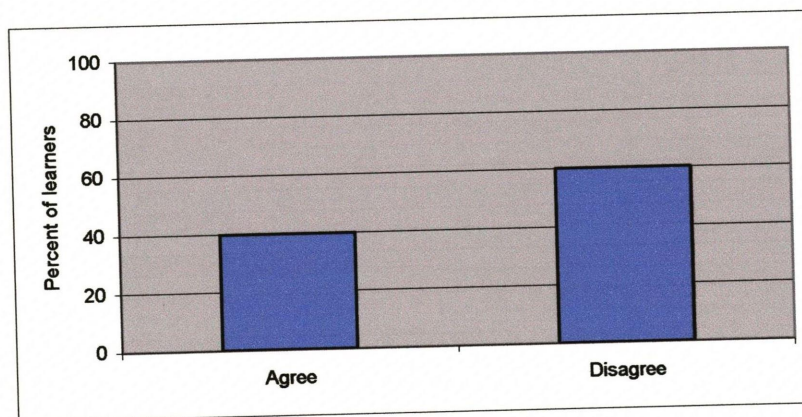


Figure 5. Views on the Usage of Plastic Bags by Learners

The Figure 5 illustrates that sixty percent disagree with the Minister of Environmental Affairs and Tourism because they feel that many people will lose their employment. Forty percent of the respondents think that not using plastic bag is a good idea because plastic bags are not good for the environment. It takes many years for plastic bags to decompose. It was noted by the researcher that the majority of learners do not take environmental impact into consideration. Environmental education can play a significant role in making learners develop an understanding of the principles and processes of the natural environment. Environmental education can also contribute to the development of sensitive and literate citizens who can be critical on scientific issues.

#### 5.4 Environmental Sensitive Areas

##### 5.4.1 Preferences between Zoo and Game Reserve

This question was asked to examine the kinds of protected areas learners visit. This is important because it highlights what kind of places learners are exposed to. The results are presented below in Figure 6.

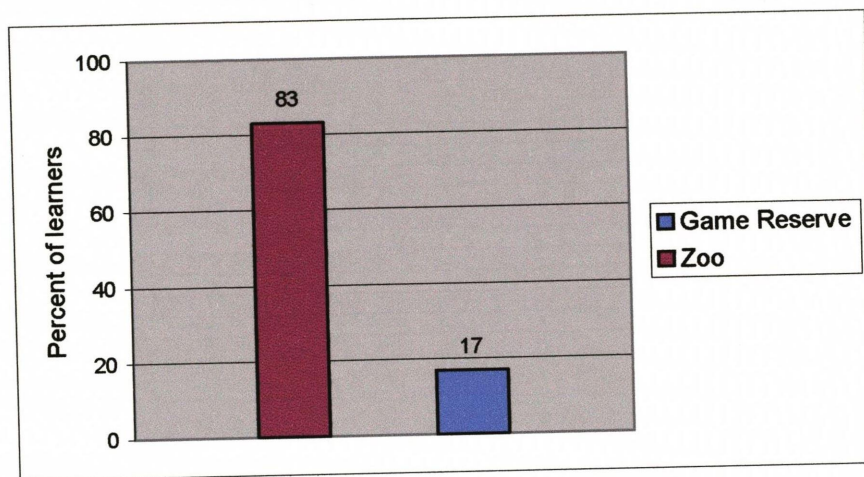


Figure 6. Learners' Preferences for Habitats of Wild Animals

The Figure 6 illustrate that eighty three percent of learners go to the zoo when they would like to see wild animals. Seventeen percent go to a game reserve. The researcher noted that the majority of the learners visit the zoo, rather than game parks. The reason for this according to the learners is that game reserves are far away from their homes as compared to the zoo. Financial constraints are another problem, as most of the learners have no transport to go and see wild animals in game reserves. Therefore, they find it difficult to get access to game reserves. They would like to visit the game reserves to learn more about wild animals and their relations to one another in their ecosystem.

#### 5.4.2 Game Viewing in South Africa

A question asked here was to establish whether learners know protected areas around the country for game viewing. The results of these are illustrated below in Figure 7.

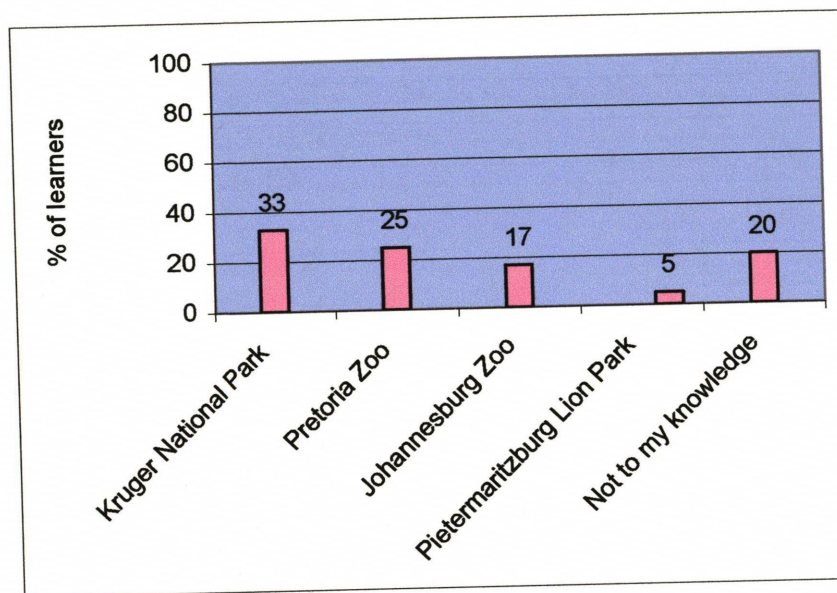


Figure 7. Places to See Elephants

The responses show that thirty three percent would recommend Kruger National Park to see elephants, twenty-five percent said the Pretoria Zoo, seventeen percent pointed to the Johannesburg Zoo as the best place to see elephants, five percent found Pietermaritzburg lion park the most appropriate place and finally, twenty percent did not know where to send the tourists. The researcher concluded that the majority of the learners preferred Kruger National Park, which is the largest park in South Africa. The reason that the majority of the learners chose Kruger National Park might be because it is the best known game reserve in South Africa.

Other parks are probably less known to them because they have not visited them yet. Pretoria and Johannesburg Zoo are best known by the learners because they are closer to their homes and they may have visited the zoos at least once or several times in their lifetime. If

environmental education could be established as an independent subject, it would create more opportunities for the learners to visit game reserves. They can learn and experience the natural habitat of the wild animals, rather than seeing wild animals in small cages in a zoo.

### 5.4.3 Visitation to the Zoo

A question was presented to learners, to check the frequency of visitation to the zoo and establish whether there is a need to develop field trips to zoological gardens. The results of these are shown in Figure 8.

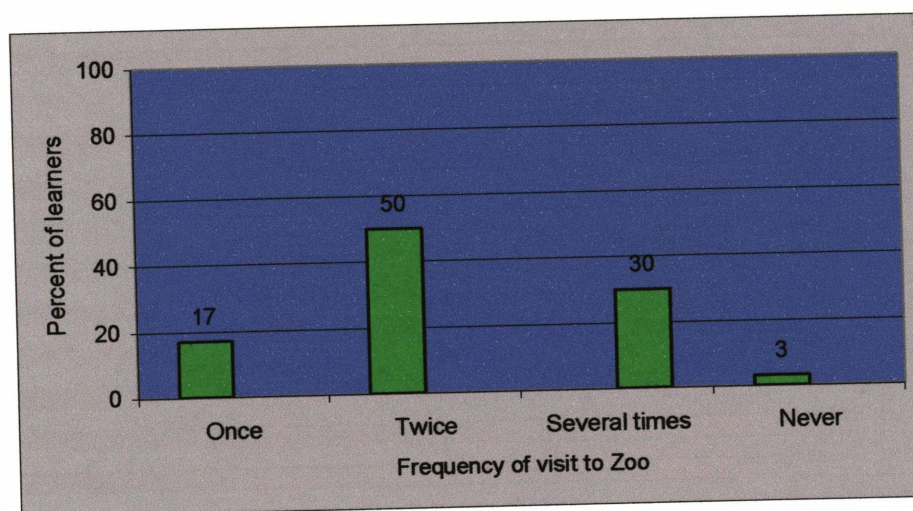


Figure 8. Frequency of Visit to a Zoo

The figure above illustrates visitation to the zoo. Fifty percent visited the zoo twice in their lifetime. Thirty percent visited the zoo several times in their lifespan and seventeen percent visited the zoo

once. The remaining three percent of the respondents never visited a zoo. It was noted by the researcher that the majority do not frequently visit a zoo. The reason for this is that schools do not make any provision to visit zoological gardens.

## 5.5 Social Activities

### 5.5.1 Learners' Activities in their Leisure Time

The learners were asked what they like to do in their free time. This was asked to determine what kinds of entertainment they engage themselves in during their leisure time. This is important because it gives an idea regarding the types of skills and knowledge that need to be developed. The results of these are illustrated in Figure 9.

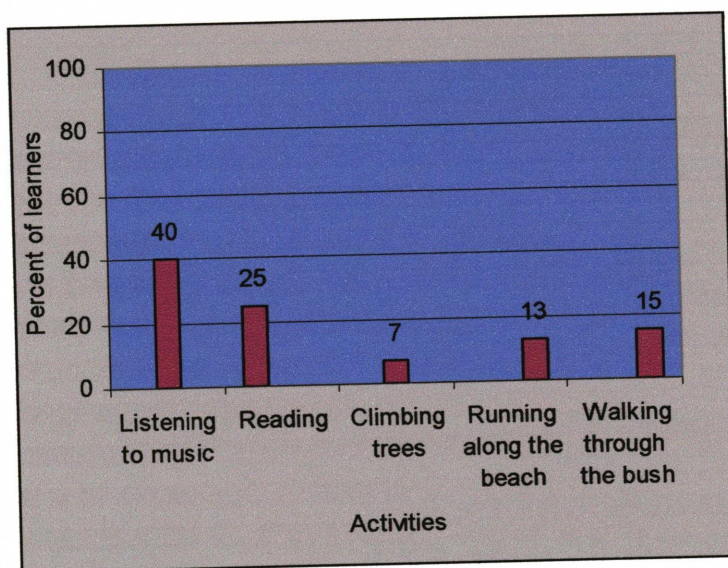


Figure 9. Learners' Social Activities in their Free Time

It was noted that forty percent of the respondents prefer listening to music, twenty five percent like reading books, rather than taking a walk through the bush, thirteen percent like running along the beach and fifteen percent liked walking through the bush. A minority of five percent liked climbing trees.

This suggests that learners have less interest in environmental activities during their leisure time. Environmental education can be used here as a tool to sensitise learners to take environmental issues into consideration, so that they engage themselves during their free time in community environmental awareness programmes. When learners reach tertiary institutions they can be able to pursue environmental education as a career choice.

#### 5.5.2 Preference between Cinema and Dolphinarium

Learners were asked to point out their preference between going to the cinema or to the dolphinarium. The results are shown below in Figure 10.

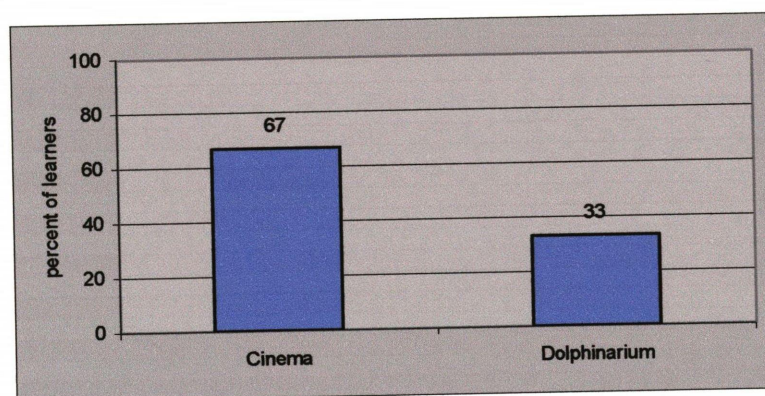


Figure 10. Choice Preference between Cinema and Dolphinarium

It was noted that thirty three percent preferred to go to the dolphinarium instead of going to the cinema. Sixty seven percent preferred not to have their birthday treat at a dolphinarium. They chose to go to a movie. The researcher concluded that the majority of learners like movies rather than the dolphinarium. Interest in places such as dolphinarium can be stimulated through environmental education.

### 5.5.3 Preference for Drakensberg Mountains and Lost City

This question also relates to making choices during learners vacation time. The learners were asked where they would prefer to go for a holiday treat, to the Drakensberg Mountains or to the Lost City. The results are illustrated in Figure 11.

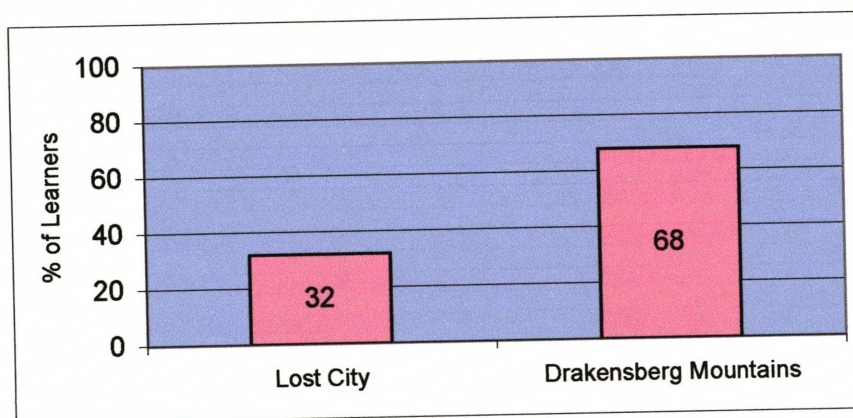


Figure 11. Preferences between Drakensberg and Lost City

It was noted that a majority of the learners prefer to go to the Drakensberg Mountains rather than to the Lost City. This means that

the learners do have an interest in natural phenomena, such as mountains and rivers.

Teachers can play a crucial role in educating learners about the importance of the environment, for example, by conducting field trips and excursions to various places such as the Drakensberg Mountains. They can help learners to explore the biodiversity and natural resources in South Africa.

A conclusion can be drawn, from the results illustrated in Figure 9 and 10, that learners preferred modern urban forms of entertainment because these are what they exposed to. On the other hand Figure 11 indicated that, given the opportunity, learners could learn to appreciate nature and the wilderness in place of urban pursuits.

Table 1 in Chapter 4 shows the age and gender of learners in the schools that participated in this study. In all the grades, a disparity was found between the responses of male and female learners. The highest percentage of environmentally conscious respondents were male. They were more knowledgeable on environmental issues than females who, on the other hand, were more willing to participate in environmental activities. However, there was some degree of male learners' participation in environmental projects such as the Soweto Operation Littering Big Tree. Table 1 is therefore a clear illustration of the level of environmental awareness of learners.

Table 1 further suggests that, although learners do have the same degree of environmental awareness, this is simply not adequate

for the times. There is a lot more they could learn. These findings constitute a good starting point for anyone who is interested in stimulating the interest of the youth in environmental matters.

#### 5.6 The Position of Teachers and the Principals with regards to Environmental Education

It is apparent to the researcher that, the lack of environmental education in secondary schools is not deliberate, because the majority of teachers were not trained in college to teach environmental education. This may be attributed to the fact that environmental education is not in the college curriculum. Hence the majority of teachers cannot fulfil the objective of environmental education in secondary schools.

Environmental education is about addressing environmental problems. Teachers need to have knowledge about environmental education in order to be effective in contributing meaningfully to environmental matters. Teachers need special programmes that provide information about the availability of different environmental education resources.

Principals of the six schools who participated in this study also are not acquainted with environmental education as mentioned previously. They have little knowledge of environmental education. Therefore there is little possibility that environmental education will be implemented.

## 5.7 Understanding of Environmental Education by Educators and Principals

Data from the questionnaires and interviews shows that the education system that was in existence in the past was prejudicial in the sense that an important subject such as environmental education was not offered to learners in secondary schools. This had a negative impact on learners as the subject was only offered at tertiary institutions. This late exposure to the subject was problematic for many learners.

The lack of environmental education has serious socio-economic and political consequences. These can be categorized into three namely:

- (a) Social Aspect: The problem with this aspect is that it affects the social environment of learners, teachers and principals. The learners manifest this by littering all over their school. This littering has harmful effects on the individuals themselves because it causes land pollution that can be detrimental to their health.
- (b) Economic Aspect: The problem here is that government may waste money through making funds available to the municipalities to purchase containers that are not used effectively by learners and surrounding communities. For instance garbage may be found lying next to a container. This is because of ignorance on the part of the learners, teachers and principals about environmental issues.

(c) Political Aspect: The problem with this aspect can be attributed to the fact that environmental education was not offered as a subject to the previously disadvantaged communities. There is a need to sensitize learners to the importance of their environment through environmental education. This situation shows that environmental education is not valued in the schools that participated in this study. There should be environmental campaigns in schools to raise awareness and to trigger learners' understanding of environmental issues.

There has been a neglect or oversight by the Department of Environmental Affairs and Tourism. This is evidenced by the fact that environment officers never visit schools. A strategy that can be employed is to invite environmental officers to and conduct seminars and workshops on environmental issues. Another approach can be to form co-operations with other institutions to advance and develop environmental awareness at various levels. In this regard the Department of Education should see a need to actively engagement. This plan should not be seen as a temporary event but must be a continuous and ongoing process.

The development of the curriculum framework is guided by the principles of the White Paper on Education and Training of 1995. Learners' views should be actively sought and considered when the learning programme is implemented.

Curriculum 2005 is a new educational strategic plan. This is a good developmental plan that aims at improving the quality of

learning. This plan may take into consideration subjects that were previously not offered in secondary schools such as environmental education as it will redress the problems of the past. Curriculum 2005 is envisaged to be a redress programme because it will come up with a clear integrated and organized programme that will enable learners to have a chance to understand environmental issues at primary and secondary schools.

### 5.8 Summary

The results of the data have been presented in Chapter Four and analyzed in Chapter Five. The results have been evaluated in the context of the aims and objectives of the study. The analysis and discussions made in Chapter Five will draw meaningful conclusions and recommendations with regards to environmental education in the subsequent chapter.

## CHAPTER 6

### CONCLUSION AND RECOMMENDATIONS

#### 6.1 Conclusions

The main objective of this study was to investigate whether secondary schools in Soweto make provision for environmental education as an independent subject. Therefore, one hundred and eighty learners were administered questionnaires to complete. Interviews were conducted with teachers and principals of the same schools. Based on the results obtained in the study the following conclusions are made.

The application of environmental education in secondary schools is lacking. Learners have little knowledge and understanding of the concept of environmental education. This is also associated with the lack of understanding of environmental issues by teachers. The lack of understanding and knowledge of environmental issues results in a lack of commitment by teachers and principals to promote environmental education. There is also a lack of consultation amongst the teachers with other educational institutions.

Research findings reveal also that the lack of training to teach environmental education is caused by the reason that teachers did not

receive training to teach environmental education in their respective educational institutions of learning. Policymakers did not see a need for a national level curriculum in the past for teachers. The legacy of the past still continues to reveal itself in the present situation. Under apartheid the curriculum was used to reinforce racial ideology and control and discourage teachers and learners from developing initiative and critical thinking. Therefore, after 1994, it was imperative that the new curriculum be restructured to reflect and promote the values underlying transition in South Africa.

All the above justifies the problem statement that environmental education still enjoys lower status as compared to other subjects such as Geography, Biology and History. In Curriculum 2005, emphasis is placed more on an integrated approach and there are 8 learning areas. Environmental education is integrated in two of the eight learning areas, which are Natural Science and Social Science. It is still not yet being implemented as an independent subject within the Curriculum 2005.

Furthermore a number of conventions played a fundamental role in the development of environmental education and in the recognition of environmental problems. According to these conventions environmental education is supposed to develop awareness, knowledge, attitude and skills to help social groups acquire and solve environmental problems. Environmental education is ought to be offered in all secondary schools and yet this is not the case in the researcher's findings. Apparently some schools do not have

environmental education. Those that have environmental studies offered it as part of Geography, Biology and Agriculture.

The Tbilisi Declaration, which was the world's first intergovernmental conference in 1977, noted the important role of environmental education in the preservation and improvement of the world's environment. Very little has happened on the ground in terms of the introduction of environmental education in South Africa. The goals and objectives of the Tbilisi Declaration have not yet been realised. The Rio Earth Summit placed great emphasis on sustainable development. It encouraged the use of the natural resources without comprising resources for future generations. These aims have not been realised in Soweto secondary schools also. Many people still throw away plastic bags and cans instead of creating recycling projects. These projects can assist community members to create employment.

The Earth Summit, held in Johannesburg 2002, had its main focus on poverty eradication, as well as a call that environmental education should be implemented in the school curriculum. South Africa was chosen to host the World Earth Summit meaning that the key outcome of the conference should have an impact in making people aware of the significance of environmental education.

It is a sobering indication that many South African children who should be nurtured to be green thinkers of the future are not. Environmental education is not receiving its due attention in some

South African schools like in some parts of the world. Schools still offer very limited opportunities for learners to learn environmental education.

The following are some of the recommendations for environmental education as an independent subject.

## 6.2 Recommendations

- (a) Teachers should be enabled to become agents of environmental education. This implies developing curricula and teaching material, which are locally adopted with regards to both contents and language.
- (b) Teachers who suffered from the weaknesses of the past educational system should be trained and motivated. Part of the weaknesses may be overcome by bringing expertise from outside the educational system into the school, for example, NGOs and various sectors of the economy and society at large, and by drawing outside resources, for example, through environmental resource centres.
- (c) For effective management of environmental education within the formal education system a multidisciplinary approach seems to be appropriate rather than the interdisciplinary approach at the secondary level.
- (d) Workshops, seminars and conferences should be held annually to provide teachers with background on

environmental education and practical ideas on the integration of environment into all learning areas across the curriculum.

- (e) In-service training on environmental education is necessary so that the teachers' attitudes and confidence are strengthened. The goal of in-service training should be to eliminate or reduce known barriers. Teachers should be trained so that environmental education can be used as a strategy for the utilisation of environmental resources.
- (f) Environmental education should be taught in all grades throughout primary and secondary schools.
- (g) Indigenous knowledge systems should be included in the environmental education programmes to cater for cultural diversity. This may include, for example, making use of religion, symbolism and traditional learning process as embodied for instance in drama, dance and story telling.
- (h) Finally, the research project led to the conclusion that environmental education in secondary schools needs urgent attention. In order for environmental education to be a success in secondary schools, the previously mentioned aims in Chapter One and recommendations should be implemented as soon as possible.

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APPENDIX A

**Please answer all the questions provided below as honestly as possible, you are assured complete confidentiality for your answer. Your participation will be highly appreciated.**

Learners' Questionnaire

1. Demographic profile of the school learners

1.1. Age.....

1.2. Sex.....

2. General ideas about the environmental education?

2.1. What is environmental education?

.....  
.....  
.....  
.....

2.1. Do you have environmental education in your high school?

(a) Yes

(b) No

2.2. What subjects do the learners prefer in their school?

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.....  
.....

.....  
...

2.3. How do you feel about the change to Curriculum 2005?

.....  
.....  
.....  
.....

3. Learners understanding about governmental proposal on Environmental Education.

3.1. The Minister of Environmental Affairs and Tourism is proposing that people should stop using plastic bags, do you agree with him?

(a) Yes

(b) No

Explain your answer?

4. Knowledge of animals' species in South Africa

4.1. Where would you prefer to go: the Zoo or a Game Reserve in South Africa?

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.....  
.....  
.....

4.2. Where in South Africa would you recommend a visitor from overseas to go see wild elephants?

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.....  
.....  
.....

4.3. How many times have you visited a Zoo?

.....  
.....  
.....  
.....

5. Preferences on social activities concerning environmental education

5.1. Underline any of the following activities which you really enjoy doing?

- a) Listening to music
- b) Reading
- c) Climbing Trees
- d) Running along the beach
- e) Walking through the bush

5.2. If your parents allow you a choice between going to the Cinema or to the Dolphinarium, which one will you choose?

Tick the box below

Cinema	
Dolphinarium	

5.3. Where would you prefer to go between: Lost City and Drakensberg Mountain?

Tick the box below

Lost City	
Drankersberg Mountain	

APPENDIX B

**Please answer all the questions provided below as honestly as possible, you are assured complete confidentiality for your answer. Your participation will be highly appreciated.**

Interviews Schedule for Teachers/Principals

1. Do you have environmental education in your school?

.....  
.....  
.....

2. How do you feel about the change to Curriculum 2005?

.....  
.....  
.....

3. Why is environmental education not being taught as an independent subject?

.....  
.....  
.....

4. Which possible solution would you suggest for the lack of Environmental Education in schools?

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.....  
.....

5. How frequently do environmentalist and agricultural extension officers visit your school?

.....  
.....  
.....

6. Do you have environmental campaigns in your school?

.....  
.....  
.....

7. Do teachers teach environmental issues?

.....  
.....  
.....

8. In your opinion, in which grade should environmental education be implemented and why?

.....  
.....  
.....

9. Why are teachers not trained to teach environmental education in your school?\*

.....  
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.....

10. What are the obstacles to creating environmental education as an independent subject in schools?\*

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.....  
.....

11. What role should Principals play to influence environmental education in their schools?\*

.....  
.....  
.....

12. What programme are there to implement environmental education in secondary schools?\*

\* These questions were only directed towards the Principals of the schools.

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## APPENDIX C

### **GAUTENG DEPARTMENT OF EDUCATION AND TRAINING**

Minutes of the meeting held with Mrs Ranjini Pillay, the National Chief Education Specialist – National Environmental Education Programme Coordinator for Gauteng.

Date : 15 June 2001

- **With regard to recent government initiatives**

National Environmental Education Projects (NEEP) have been introduced in the National Department of Education and in each province

NEEP-itself has no fund. It relies on sponsorship and support for Community Based Organisation CBO's and Non-governmental Organizations NGO's.

- **Issues of national interest that are related to environment awareness**

Celebration of Theme Weeks, Theme Days, National Environmental Initiatives.

- **Organizations responsible for Environmental Education**

Department of Water Affairs and Forestry (DWAF), Department of Agriculture and Environmental Affairs (DAEA), Department of Environmental Affairs and Tourism (DEAT), Working for Water-20-20 Vision, Blesbokspruit Nature Reserve.

NGO's Delta Environmental Centre

- **The difference between the previous syllabus and the current Education Policy**

Old syllabus did not focus on environmental education:- Merely looked at the Celebration of special days, environmental clubs and competition.

New syllabus (Curriculum 2005) focuses on environmental education as a cross syllabus. Although Curriculum 2005 does not sufficiently address the question of environmental education. Thus the revised National Education Curriculum.

- **Obstacles**

-Teachers' capacity to prepare and implement environmental education

programme is lacking.

-Lack of environmental resources.

-Where resources are available, teachers do not know how to utilize them.

-No environmental assessment methods and techniques in places.

- **Why Environmental Education cannot be independent subject**

It is not part of the National Curriculum

- **Recommendations**

-Capacity building of district officials.

-Capacity building of teachers and provision of relevant resources.

- Assistance in the use of local resources regarding environmental education.
- Assessment tools and techniques in environmental education, for example, learning programmes in environmental education.