Environmental Education as a strategy towards sustainable living for rural communities

MAPULA PATRICIA TLHAGALE

9628667

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Supervisor: Professor W. J. Fraser

Department of Curriculum Studies

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Photo 2.2 was taken by Doris Murungu, a Masters student at the Department of Tourism Management, who has allowed me to use it.

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INDEX OF ABBREVIATIONS

EE: Environmental Education

EEFSD: Environmental Education For Sustainable Development

EST's: Environmentally Sound Technologies

IUCN: International Union for the Conservation of Nature

NGO's: Non Governmental Organisations

PNP: Pilanesberg National Park

T.E.C: Tourism Education Centre

UN: United Nations

UNEP: United Nations Environmental Programme

UNESCO: United Nations Educational, Scientific and Cultural Organisation

UNICEF: United Nations Children's Fund

VR: Virtual Reality

INDEX OF SOUTH AFRICAN TERMS

Bakgatla-Ba-Kgafela: A Tswana linguistic group living in the Moruleng area which has a vervet monkey as its totem animal.

Batlhako: A Tswana linguistic group whose totem animal is an elephant.

Bodirelo: 'Place of work', the industrial area near Mogwase residential area.

Bomme-Ba-Seaparo: Church Women's league

Bophuthatswana: Former homeland belonging to the Tswana speaking people, though everyone was welcome to live there.

Lerome: A residential area which is a subsection of Moruleng.

Lesetlheng: A section in Moruleng which is slopy, rocky and dry.

Mabodisa: A section on the eastern part of Moruleng residential area.

Madutle: A section of Moruleng whose residents formely resided in the area that is now the Pilanesberg National Park.

Manyane: The president of the former Bophuthatswana homeland, after whom the entrance Manyane Gate was named.

Mogwase: An urban residential area named after the nearby river.

Mopani tree: A tree in which high protein mopani worms are found; its wood is used for arts and crafts.

Morula: An abundant tree in the area, used for medicinal purposes as well as traditional beer.

Moruleng: A residential area to the north-east of the Pilanesberg National Park, meaning “the place of the maroela” due the abundant maroela trees in the area.

Phuting: A section of Moruleng whose totem animal is a springbok.

Ramatshaba: A section in the northern part of Moruleng which gained its name from its habitants’ fear for immunisation.

Segakwana: A residential area, also part of Moruleng, which is on the northeastern side.

Tswana: A linguistic group residing mostly in the North-West Province in South Africa.

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ABSTRACT

Sustainability is a concept that is very popular but has not yet been properly understood by most people, especially those who live in undeveloped and developing countries. "Since the late 1980's there has been an explosion in the number of texts and articles, plus courses and consultants, which are concerned with sustainable forms of development" (Hall, 2000:I). The major problem regarding an understanding of this concept is generally brought about by being not adequately informed. Books are being written, papers are being presented at conferences, articles are being published, and technology has also reached a turning point with regard to information dissemination.

The only drawback to all these positive initiatives is that they are not easily accessible, especially to those people living in the rural areas of South Africa. These areas are not adequately resourced, hence the type of lifestyle that is being led — one in which people engage in activities that are beyond the ability of the environment, which is their resource base, to sustain itself. It should also be noted that these people are not acting out of ignorance but out of a need to survive, thus putting the resource base under pressure.

Environmental education is that component of education that enlightens and conscientises people about their immediate environment. Though its principles and guidelines are set according to international standards, they can and should be broken down and simplified in order to fit into the lifestyles, value systems, social systems and education (formal and informal) of the people at the grassroots level. Through this process, people will start to appreciate their own environment, to use it but handle it in a manner that will still enable future generations also to have their own experiences with it. This appreciation will also enable them to not only acknowledge the economic value of the environment, but also to integrate it with its social value as well as its environmental value.

Organisations and institutions are involved in the distribution of information on environmental education principles, which leads to people being knowledgeable about conservation matters and thus implementing them in order to achieve sustainable living. One such institution is the Pilanesberg National Park. It is concerned with ecotourism issues but also has an education centre, which is aimed at conscientising people, not only ecotourists, regarding conservation matters and environmental education, as an act of adding value to society.

This study investigates the impact that the Pilanesberg National Park has on peoples' living environment, and especially on communities on its north-eastern border. It will look at the role of authorities in the area, such as the municipality council, the Pilanesberg education centre authorities and members of the Bakgatla-Ba-Kgafela Tribal authority, in a quest to determine the role that they play in helping the communities to be environmentally literate and therefore to live sustainably.

The investigation also considers into the community at large, that is, the youth, women and other members of the community, to discover whether they live sustainably and do receive or have received information about environmental education and are able to put this into practice.

The study has revealed that most of the people of the Mogwase - Saulspoort area are not even aware of the educational centre at the Pilanesberg Park and that even those who know, have never visited the centre and do not know anything about its activities nor that there is an opportunity for them, through this centre, to become informed about issues of conservation and sustainability.

The study has also revealed that there is a tremendous amount of interest within these communities to start learning about conservation matters, environmental education principles and guidelines as well as about sustainability. Schools have also shown interest in forming environmental clubs where issues of the environment can be tackled.

Future action is guided by suggestions for the formation of environmental clubs and also the management of them.

SAMEVATTING

Hoewel volhoubaarheid as konsep baie gewild is word dit nog nie heeltemaal deur die meeste mense, veral nie deur die in die onontwikkelde en ontwikkelende lande, verstaan nie. Sedert die laat 1980's is daar ‘n ontploffing in die aantal tekste en artikels, asook kursusse en konsultante wat met volhoubare vorme van ontwikkeling te make het (Hall, 2000:1). Die grootste probleem waarom mense nie die konsep verstaan nie is omdat hulle nie genoegsaam ingelig is nie. Boeke word geskryf, referate word by konferensies voorgedra, artikels word gepubliseer terwyl tegnologie ook ‘n keerpunt ten opsigte van die verspreiding van inligting bereik het. Die enigste nadeel van al hierdie posetiewe inisiatiewe is dat dit nie maklik toeganklik is nie, veral nie deur daardie mense wat in die landelike gebiede van Suid-Afrika woon nie. Die gebiede beskik nie oor genoeg hulpbronne nie en daarom word daar ‘n lewensstyl en aktiwiteite gevolg wat nie deur die omgewing, die mense se eintlike hulpbronbasis, aanhoudend gedra kan word nie. Hierdie mense se optrede spruit egter nie uit onkunde nie maar uit ‘n behoefte om te oorleef en daarom word die hulpbronbasis onder druk geplaas.

Omgewingsopvoeding is daardie komponent van opvoeding wat mense inlig en bewus maak van hul onmiddelike omgewing. Hoewel die beginsels en riglyne daarvan volgens internasionale standaarde ingeklee word, behoort dit vereenvoudig te word sodat dit by die lewenswyswes, waardestelsels, sosiale stelsels en opvoeding (formeel en informeel) van die mense op grondvlak kan inpas. Sodoende sal mense begin om hul eie omgewing te waardeer en op so ‘n wyse daarmee om te gaan dat toekomstige geslagte ook hul eie ondervings daarmee kan geniet. Hierdie waardering sal hulle in staat stel om nie net die ekonomiese waarde van die omgewing te erken nie, maar om dit ook met die sosiale- en omgewingswaardes te integreer.

Organisasies en instellings is betrokke by die verspreiding van inligting oor die beginsels van omgewingsopvoeding wat daartoe lei dat mense kundig is oor bewaringsaangeleenthede en dit dus implementeer om volhoubare lewenswyses te bereik. Een so ‘n instelling is die Pilanesberg Nasionale Park. Dit is gemoeid met kwessies oor ekotoerisme en beskik ook oor ‘n opvoedingsentrum wat daarop gemik is om mense, en nie net ekotoeriste nie, bewus te maak van bewaringsaangeleenthede en omgewingsopvoeding, as ‘n wyse waarop waarde tot
die gemeenskap toegevoeg word.

Hierdie studie is daarop gemik om die impak wat die Pilanesberg Nasionale Park op mense se lewende omgewing, maar veral ten opsigte van die gemeenskappe aan die noordoostelike grensgedeelte, te ondersoek. Dit sal die rol van owerhede in die gebied soos die munisipale raad, die Pilanesberg opvoedingsentrum se owerhede, asook lede van die Bakgatla-Ba-Kgafela-owerheid, ondersoek in ‘n poging om vas te stel watter rol hulle speel om die gemeenskappe te help om ten opsigte van die omgewing ingelig te wees sodat hulle volhoubaar kan leef.

Die ondersoek neem ook die groter gemeenskap, insluitend die jeug, vroue, en ander lede van die gemeenskap, in ag om vas te stel of hulle volhoubaar leef, of hulle inligting ontvang oor omgewingsopvoeding, en of hulle dit in die praktyk kan toepas.

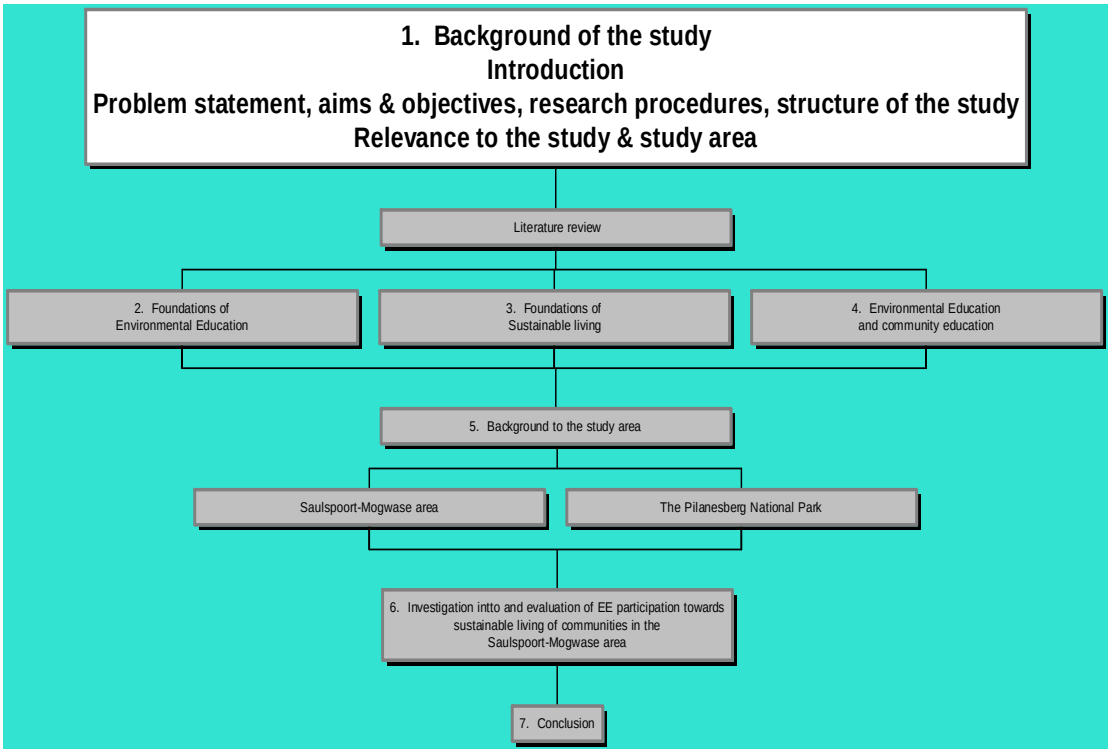
Die studie het openbaar dat die meeste mense in die Mogwase-Saulspoortgebied nie eers bewus is van die bestaan van die Pilanesbergpark nie en dat diegene wat daarvan weet nog nooit die sentrum besoek het of enigiets van die aktiwiteite daarvan weet nie. Nog minder weet hulle dat daar vir hulle ‘n geleentheid is om deur middel van hierdie sentrum ingelig te word oor die kwessies van bewaring en volhoubaarheid nie.

Die studie het ook aangetoon dat daar ‘n geweldige groot belangstelling binne hierdie gemeenskappe bestaan om oor bewaringsaangeleenthede, omgewingsopvoedingsbeginsels en riglyne, asook volhoubaarheid te leer.

Skole het ook ‘n belangstelling getoon om omgewingsklubs te stig waar kwessies oor die omgewing aandag kan kry.

Toekomstige optredes word gelei deur voorstelle oor die stigting van omgewingsklubs en die bestuur daarvan.

1 BACKGROUND OF THE STUDY



1.1 Introduction

It has been centuries since education was regarded as the first priority for human beings; also, environmental problems have long been experienced, particularly with development, but the idea of bringing together these problems and education has been a less urgent activity (Brinceño & Pitt, 1988:xi).

This chapter describes the background of the study, and gives the reasons for undertaking it. It also provides the motivation for conducting the investigation, which highlights the importance of environmental awareness amongst the residents of the Mogwase-Saulspoort area. The problem statement, aim and objectives give an indication of where the problem lies. Research procedures are explained in detail so as to enable readers to understand the approach taken for the investigation. Figure 1.1 has been used to explain the

sequence of the study and in order to enable readers to understand the basis of the study, the relevance thereof will be discussed. In order to familiarise the reader with the study area and the residential areas, these have been described and a map (figure 1.2) has been used as an indication of where the investigation will be conducted. Statistical values have been given to illustrate the number of people residing in the study area.

The last three decades of the 20th century were marked with a major concern over the environment. All living organisms still depend on the same environment which possesses the same limited resources that were being used some centuries ago. It is no surprise that environment and resources have been depleted by the rate of population growth as well as by the rate of development, which go hand-in-hand with human use. The destruction of this fragile ecosystem can only be avoided by a greater awareness of our environment, leading to the identification of major environmental concerns and issues as well as to the development of strategies that will address them.

The past decade has experienced major developments in the field of environmental education globally, although there has been little attention paid to it in the literature of the philosophy of education (Reid, 2002). Though means have been devised to reach all the people of the global village, especially those that are in rural areas, the present major concern is whether those people who have received this education can put it into practice and therefore live sustainably. This simply means: are we moving from a rhetorical kind of instruction to a more meaningful action?

During recent years, environmental awareness has been perceived to be the core of sustainable development, but the problem that is being experienced presently is that although there is more global environmental awareness, there is still lack of participation at the local

level, probably because of lack of evaluation, where people do not understand "exactly what benefits are being derived from the investment of time and resources in environmental education? What social and environmental interests are most often served by these benefits? Are processes, strategies and resources being used appropriately, effectively and efficiently? And appropriate to what? And effective and efficient in what criteria?" (Fien, Scott & Tilbury, 2001: 380). Most communities do not participate in environmental issues, particularly those communities in undeveloped and developing countries (Otiende, 1991). The reason could be that there is not enough diffusion of information to these communities; hence they do not take heed of the effects of their environmental actions, a factor which makes sustainable living difficult to achieve.

Most of the effects on many residential areas are due to lack of information about environmental education, which is one of the "interventions that are aimed towards increasing the capacity for social change and improvement" (Fien, et al, 2001: 380), and about conservation and sustainable living and are therefore community-related and community-specific (Gartner, 1996). Community-related in the sense that the impacts were caused by the communities themselves due to activities that arose from their different needs and motives. Community-specific, because it is the very same people at the local level that become affected by the impacts even before any region or country can identify them.

1.2 Motivation for conducting the investigation

*" **It seems that only a greater awareness of our environment can help prevent the global destruction of our fragile ecosystem.**"* (Otiende, 1991:15)

Environmental deterioration can be ascribed to two reasons. The first is the depletion of essential resources because of a need to maintain present-day lifestyles and the deterioration in as well as the destruction of the natural processes which are aimed at sustaining life on earth, whilst the second is the lack of awareness among populations, especially those that reside in rural or undeveloped countries, where due to a need to survive, they engage in activities that cause and exacerbate environmental problems such as deforestation, soil erosion, pollution and veld fires. It is only through education, which is the "key social strategy for conservation" (Fien, et al, 2001:387), that people will gain an understanding of what conservation programmes are "setting out to do, why they are deemed necessary, what they will involve, and what the ramifications are likely to be" (Fien, et al, 2001: 387).

Environmental education enforces the awareness of and encourages to sensitivity to the economic, social and political environment as well as to the ecological interdependence in urban and rural areas. It assists people in acquiring an understanding of the environment, thus encouraging them to develop a sense of responsibility toward environmental problems and also to become able to implement the solutions to those problems (Harvey, in Hurry, 1980).

Environmental education is concerned with understanding the skills and attitudes that are necessary for enhancing environmental conservation. This calls for positive action with regard to the environment, by going beyond mere information, but ensuring that there are sustainable, healthy surroundings and at the same time keeping agents of destruction at bay (Otiende, 1991).

Environmental education is seen as an integrative and interdisciplinary discipline. According to the Tbilisi Declaration (UNESCO-UNEP, 1978:1), "All subject areas, including humanities and social sciences, need to address issues related to environment and sustainable development", where this integration requires "a holistic, interdisciplinary approach" whilst different disciplines and institutions retain their basic identities. This, according to UNESCO-UNEP (1978) should be seen at all educational levels, where all disciplines are to a certain extent, attached to the environment, and "facilitates an integrated perception regarding problems of the environment and further enables more rational actions that are capable of meeting social needs to be taken" (since it includes the implementation of studies covering such areas as Biology, Economics and Geography). Indeed, it must not only serve the needs of general education, but must also show concern for practical life outside the classroom through actions that are positive for the environment.

It is not only the pupils at school that should learn to care for the environment but also the whole community: all age groups and socio-professional groups in the population (UNESCO-UNEP, Tbilisi Declaration, 1978), which is inclusive of the general non specialist public of young people and adults whose daily conduct has a decisive influence on preservation and improvement; also of particular social groups whose professional activities affect the quality of the environment, and scientists and technicians whose specialised research and work will lay the foundations of knowledge on which education, training, and efficient management of the environment should be based. All these people depend on their environment as the resource base.

It should be clearly understood that it is the community that knows and understands its resource base, hence it is the very same community that understands its base's needs. For instance, the need to raise the standard of living for the members of the community will be coupled

with the economic development of the area, and it is the resource base that will be utilised and thus end up being exploited.

With the popularity of the term "sustainable development", organisations, institutions, individuals and even governments are striving to be associated with this concept by incorporating the principles of Environmental Education and sustainability into all their actions. With all the educational systems also wanting to align themselves with sustainability, the question arising is whether they are successful in doing this or whether this success is just on paper. Also, how does information on Environmental Education and sustainable development reach the people? Are lines of communication open for all members of the society, especially those that are in the rural part of South Africa, including the communities of the Mogwase-Saulspoort area?

It is time to know whether something is being done, or whether the people of the world are merely busy organising meetings, workshops, conferences and compiling reports on the issue of sustainability? Or whether action is being taken where even the people at the local level understand these terms in their own way and can therefore take a desirable course of action. This notion of communicating, and making people understand and accept change, is what has triggered the researcher's desire to look into this matter.

1.2.1 Problem statement, aim and objectives

1.2.1.1 Problem statement

"*Our survival depends on a fragile ecosystem. Mismanagement of the earth's natural resources poses grave dangers to the biosphere, which includes the atmosphere, oceans, soils, and forests as well as the global village"* (Otiende, 1991: 13). Human populations may increase and engage in different activities as a means of survival, but the size of the earth does not and will not change.

All living organisms depend on the resources in their immediate environment. Unfortunately, these resources cannot cope with all the pressures under which they are put yet they are expected to satisfy the present as well as the future generations. Using these resources sparingly will result in them being available for future generations as well. Managing the human use of the biosphere in order to yield the maximum sustainable benefit to the present generations, whilst maintaining its potential to meet the needs as well as the aspirations of the future generations, is a concept that should be taught to all people, with different levels of education, young and old, male and female. This concept is conservation, and it is a positive type of preservation, which calls for maintenance and sustainable utilisation of the natural environment (IUCN, in Dankelman and Davidson, 1988:114).

Understanding the principles of environmental education is a step towards being able to develop sustainably, which advocates that environmental education should be a continuous, lifelong process that considers the environment in its totality, both natural and social, and uses an interdisciplinary approach through which environmental issues must be examined from local, national, regional and international viewpoints. Moreover, the focus must be on current and potential situations whilst taking cognisance of the historical background, and on being able to discover the symptoms and real causes of environmental problems. Human beings should not only develop sustainably but also have the concept of sustainability as a frame of mind, meaning simply that sustainability should be part of their entire lives, whether at home, at work, or with friends and family. It also implies the ability to capture

and comprehend as well as to know exactly how to act and behave towards the environment on which they all depend, and will still depend on in future. It is of utmost importance for humans not only to understand the foundations and fundamentals of environmental education, but also to make them part of their thinking and actions and thus be able to adopt a life discourse that turns their lifestyle into one of being committed to a positive relationship to nature (IUCN, in Dankelman and Davidson, 1988).

Environmental education is defined by the International Union for Conservation of Nature (IUCN) as, "*the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelationships among man, his culture and his biophysical surroundings, entailing practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality*" (UNESCO cited in Neal and Palmer, 1990:2). It is a style of education that can inculcate the idea of conservation into the minds of people, resulting in a positive environmental attitude, ethics and values that can lead to healthy action towards the environment, thus enhancing sustainable living.

The environment is a pillar against which all human beings lean in order to survive. its deterioration is normally brought about by the activities of these people and this leads to environmental problems such as soil erosion, pollution and deforestation, which in turn affect their lives negatively. Environmental education is therefore a tool that helps people to develop those skills and attitudes that are necessary to understand the importance of taking care of their environment and thus to become able to make use of its principles in order to lead a better life (Neal & Palmer; 1990). Having acquired the necessary information on how to do this, it becomes easier for them to handle the environment in a desirable manner and thus make it part of their life, an action that will make sustainability achievable.

The success of every educational paradigm is the ability to put its principles into practice, as well as obtaining the envisaged output. This implies that through environmental education, people will be able to identify the environmental problems experienced in their area, identify the causes, and try to come up with solutions either as individuals or as organizations. Furthermore, they should become able to implement the course of action that will have been chosen. Environmental education thus, through principles of conservation, brings enlightenment to the locals as to how their area can be protected. This simply means that management of the natural resources demands environmental awareness and better protection of the world around us.

The Pilanesberg National Park (PNP) possesses an environmental education programme that was envisaged by the former Bophuthatswana government as the panacea for its environmental problems and takes a firm stand towards sustainable development. Through this programme the park[1] aims to enlighten all the people in the North-West province as well as those from further afield about environmental issues and also about how to utilise a resource that also needs to be taken good care of. Members of the community are encouraged to visit the education centre in this park and so as to be enlightened about nature as well as about conservation.

The PNP, through the former Bophuthatswana government, established an environmental club called the Lengau Conservation Club (Leketi, 1992). Interested schools affiliated themselves with this club and one of their regular activities was to visit the educational centre especially during weekends. The staff at the centre also visited schools to inform them about the PNP, its history and the different activities within and beyond its borders. To date, very little can be seen that proves that the information that was provided at the educational centre in the Pilanesberg National Park has been well comprehended

[1] Information obtained from Mr Lesejane, Environmental Education Officer at the Pilanesberg National Park.

by the members of the communities in the Moruleng-Mogwase area and is therefore being implemented, as a step towards sustainable living.

The expectation is that, if the people in the Moruleng-Mogwase area are informed about nature and the principles of conservation as disseminated by the educational centre at the PNP, they should be able to lead lifestyles that demonstrate their comprehension of environmental education. Even now, the Saulspoort-Mogwase area is still experiencing environmental problems such as pollution (even the dumping site is not properly managed); soil erosion through the removal of trees and other plant species; water pollution, where waste is being dumped into the river; also, animals such as pigs, donkeys and other domestic animals are roaming about. It appears that the environmental education programme, as carried out by the Pilanesberg National Park, has not yet shown any sign of success with regard to sustainable living in the Saulspoort-Mogwase area.

Being environmentally conscious does not guarantee sustainable development and sustainable living. Knowledge is best when implemented, that is, it is not good for people to know and understand the fundamentals of sustainable living if they cannot participate in activities that will ultimately achieve sustainability. The question arises: What is it that must be done in order to achieve sustainability? Are people aware of any environmental problems in their area and the causes thereof? If so, what are they doing to solve these problems?

The crux of the matter is to couple the awareness and consciousness with a course of action that ensures the outcomes of environmental education, where the major focus is to encourage people to engage in "more pro-environmental behaviours" (Hines, Hungerford & Tomera, 1986-87; Hungerford & Volk, 1990; Roth, 1970 in Leeming, Dwyer, Porter & Cobern (1993: 8)), and to maintain sustainability. The course of action referred to thus calls for actions that support the resource

base as opposed to further degrading it. Actions such as recycling, no pollution, controlled veld fires, no chopping down of trees, no hunting, are some of the activities that humankind should strive for and above all, they should spread the gospel of sustainability though environmental campaigns, to conscientise people about the importance of respecting and supporting the environment, thus allowing it also to live.

1.2.1.2 Aim and objectives of the investigation

Aim

The study aims to investigate whether Environmental Education is indeed used as a tool or strategy for achieving sustainable living by the people of the Mogwase-Saulspoort area, through the Pilanesberg National Park, where the main focus will fall on the impact of the Pilanesberg National Park and its conservation activities on the Saulspoort-Mogwase local communities' living environment through environmental education, in a quest to spread the potential for sustainable living.

Objectives

In striving to achieve the above aim, the following objectives will serve as a guideline:

1. To review and assess the existing literature on aspects of environmental education and sustainability, as a framework on which to base arguments.

2. To investigate, by means of a questionnaire to local schools within the study area, whether the Environmental Education programme offered by the Pilanesberg National Park authorities is being implemented, and how.

3. To discover out the number of local environmental clubs within the study area affiliated to the Pilanesberg National Park, and what their role is in putting Environmental Education into practice.

4. To conduct a survey in the area in order to find out whether women in the communities are sensitive to environmental issues, what they are doing with the knowledge, and how it helps them in their everyday lives.

5. To determine the involvement of the Pilanesberg National Park authorities, Town Council and Traditional Leaders in the area, in the quest to help the communities achieve sustainability through environmental education.

6. To draw conclusions as to whether the environmental education being offered is indeed spreading and uplifting the potential for sustainable living in the area, and to arrive at some suggestions and recommendations.

1.2.2 Research procedures applied during the investigation

"***Even though it may result in social disadvantages, a lack of formal education does not necessarily imply a lack of knowledge***" (Allison *et al*, 1985 in Dankelman and Davidson, 1988:124).

The educational status of the population within the study area ranges from those who did not receive formal education at all, to those who are professionals. Within this range, there are those who only have a lower primary (up to standard two) education, as well as those who have higher primary education (standard three to standard five), standard eight, matric/senior certificate and tertiary education[2]. What is important about this range is that, even though some people do not have formal education, they are, through non-formal education, very knowledgeable about the area, its history, traditions, the culture and also have special interests like herbal healing. This stresses the fact that having no formal education does not necessarily mean that people do not have knowledge nor that they therefore cannot take part in activities where there is decision-making. Cognisance should be taken of the fact that sustainable living can be achieved through environmental education which should be taken "beyond school walls to involve parents, industry, communities, and government in the educational process" (Haury, 1998, 1)

Due to the nature, aims and objectives of this study, as well as the background with respect to the educational dimensions of the population within the study area, the research methodology decided upon could be defined as a classical heuristic literature analysis, which is followed by a questionnare-based empirical investigation, the purpose thereof being to validate the assumptions that are defined by the literature review. Also, a quantitative research method was decided upon in order to involve as many community members as possible, viz. local authorities, social clubs, church clubs, park authorities, and members of communities, so as to assess and validate the responses of the respondents according to factoral design techniques. A qualitative investigation will be carried out where there will be individual

[2] This information was acquired from the Bakgatla Tribal Authority through an interview with Mr V. Pilane.

interviews, especially with the authorities in the area, whereas group interviews will be conducted with other members of the community.

Since people in the Saulspoort-Mogwase area have different levels of education, a participatory approach will be used in this study. This approach involves the use of qualitative consultation techniques, which are used to assess the sentiments of the community. The techniques include: focus groups such as women; environmental clubs; local authorities and the Pilanesberg National Park management. These will be in the form of open-ended group interviews and will ; as well as consulting literature on all aspects related to the aims and objectives of the study.

Questionnaires will also be used, focusing specifically on schools falling within the study area. These will be used to investigate whether the schools in the area are involved in the teaching of environmental education with the help of the education centre at the park, as well as to investigate the practical environmental activities that they might be involved in, in the quest to live sustainably.

1.2.3 Sequence of the study

The purpose of this study is to determine the amount of environmental awareness, the participation in environmental activities and the urge for conservation in the Mogwase-Saulspoort area, as well as the possibility of engaging the people here to look after their environment, through taking positive decisions and actions for the environment in their area by utilising the environmental education that is being offered by the Pilanesberg National Park.

The sequence of this work begins with **chapter one**, which lays the foundation of the study by stating the aim and objectives of the study and also describes how the research will be carried out in the quest to achieve the vision, which is the environmental impact of the

Pilanesberg National Park in the Mogwase-Saulspoort area. It also shows the location of the study area within South Africa.

Chapter two focuses on the theory behind environmental education, which is regarded as a tool that can be used as the basis of an argument relating to sustainability. It lays a foundation as to the meaning of terms and concepts, also showing how they relate to each other and to sustainable living as well. Community-based environmental education is particularly included in this chapter for the good reason that it is the members of the communities that need to be environmentally aware and also because it is these people who are affected by environmental issues.

Although this study is looking at the possibility of using environmental education as a tool toward achieving sustainable living in communities on the eastern border (the Mogwase-Saulspoort area) of the Pilanesberg National Park, it becomes important that the concept of sustainability be specifically looked at, hence **chapter three** focuses mainly on this concept, its problems as well as its challenges. It is also members of the community who, after having acquired relevant information about conserving and living sustainably, must take the necessary action.

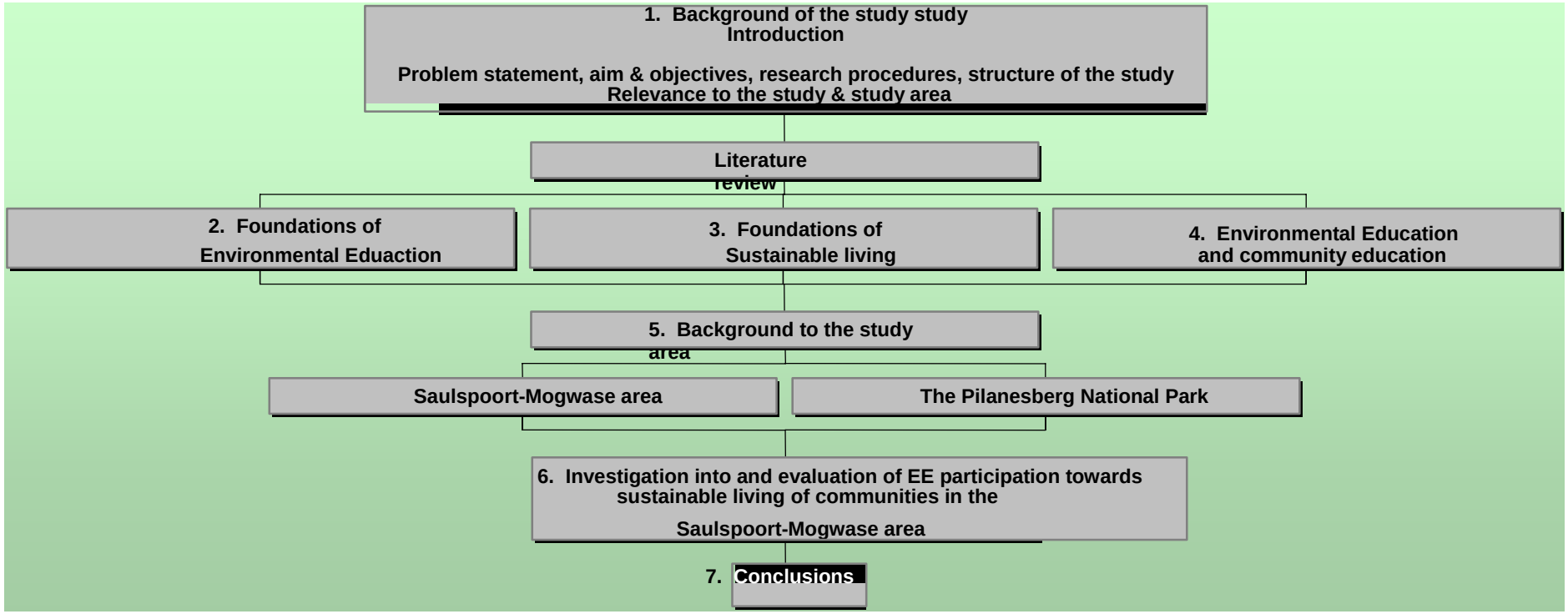
People have a place to live in and all people everywhere, to a large extent, are dependent on the resource base in their area, simply meaning that environmental education should be part of a community's way of living. This study would not be successful without the inclusion of **chapter four**: environmental education and community education, which involves: people, their settlements, and agriculture as well as natural resources.

Chapter five describes the historical background to the study area, as well as the historical background of the Pilanesberg National Park.

Chapter six focuses on an investigation and evaluation of environmental education participation towards sustainable living. The investigation also seeks to uncover whether the communities are environmentally conscious as well as appreciating their environment, and also to determine the types of activities that they are involved in, in their quest to lead a better live.

Chapter seven returns to the aim and objectives of the study and arrives at a conclusion as to whether the communities of the Mogwase-Saulspoort area are environmentally conscious and if they are not, at what suggestions should be made to make people in this area willingly accept change and live sustainably by acting positively towards their resource base.

Figure 1.1 Structure of the study



1.2.4 Relevance to the study

The involvement of the local community is regarded as the key to sustainable development, yet these same residents are expected to be part of the tourism product and to share the benefits as well as the costs (Taylor, 1995). The community should be established as the focus for decision-making and approval so that tourism planning would become part of the social consciousness of the area, and one of the important issues about local community participation is that it brings about community-wide support for volunteer programmes to promote activities such as conservation projects. It also brings about that sense of belonging as well as a sense of owning

Involvement of local communities should move beyond economic survival, environmental conservation and socio-cultural integrity, to enabling the communities to start appreciating their own natural resources (Cater, 1994 in Queiros, 2000:18), on which they all depend.

The reason behind choosing the Mogwase-Saulspoort area as the area for scrutiny is that it is very important for those communities living there to live sustainably from the benefits of the environmental education that is being offered by the Pilanesberg National Park. Through this education, sustainability can better well understood and the people in this area could participate positively regarding conservation, which could also complement the ecotourism that is being practised by the Park.

On understanding the fundamentals of environmental education, the locals could take positive action and become involved in activities which have the potential to help reverse, arrest or even prevent environmental decline. When people start to manage resources sustainably on the local level, it becomes easier and more possible to achieve the global goal of sustainable development and sustainable living, thus becoming a participative part of the global village.

Sustainability in this area could also lead to an initiative by the members of these communities to engage themselves in a number of tourism projects outside the Park (projects such as eco-trails, village or cultural tourism, to mention but a few), where job opportunities could be created, resulting in economic benefits as well as raised standards of living.

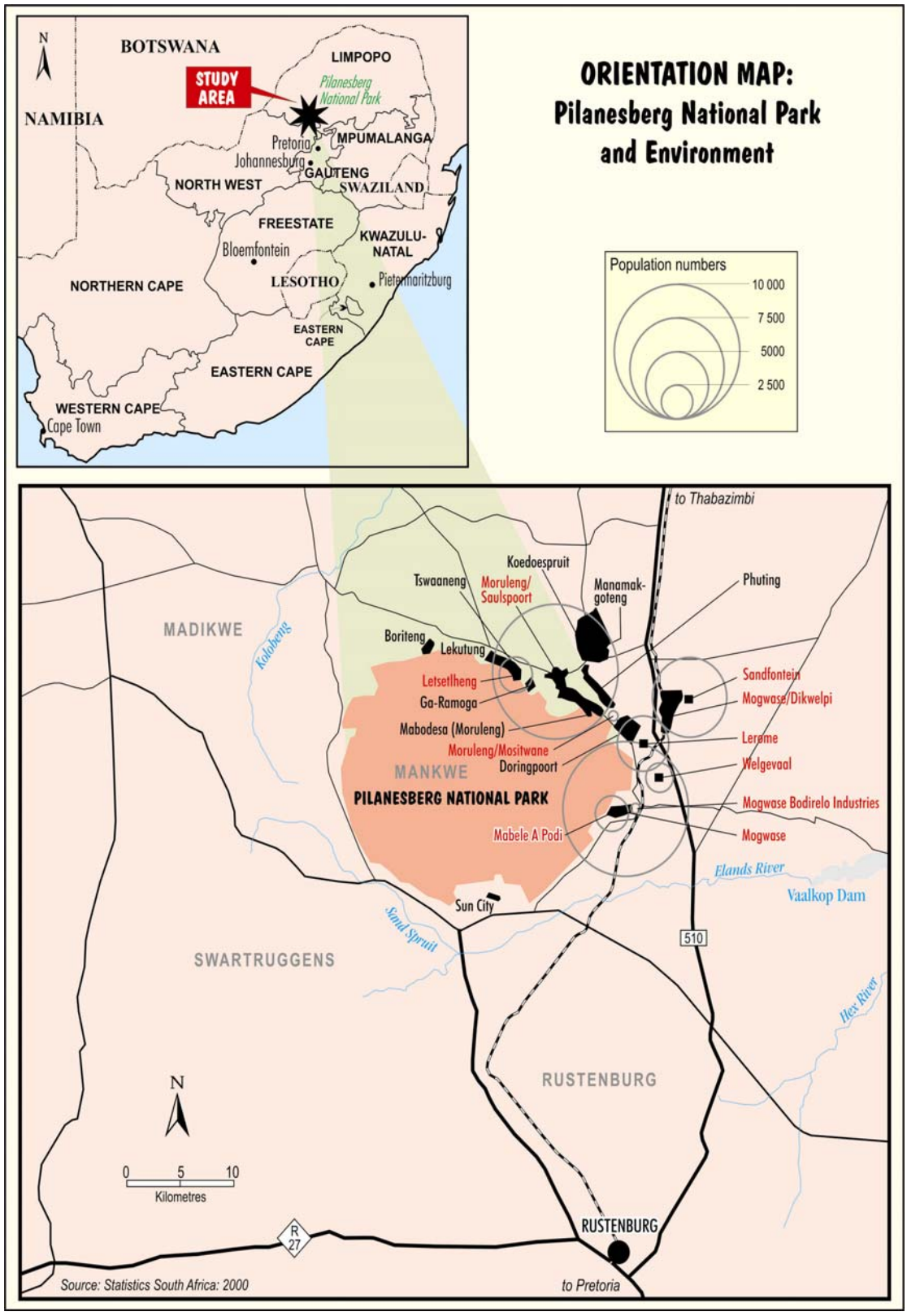
1.25 Study area

The Pilanesberg National Park is situated on an alkaline volcanic ring complex which is 1300 million years old (North West Conservation and Jacana Education, 1995) and is one of the oldest and the second largest of its kind on earth, after the Kola Peninsula in Russia (Lurrie, in Magome & Collinson: 1998: 1). The park is 55 000 ha in extent and is situated some 150 km northwest of Johannesburg in what is now known as the North West Province of South Africa. The park has a diameter of 30km and a circumference of 100 km.

There are many communities who live around the border of this Park; however, for the purposes of this study, the focus will be placed on those communities that reside in the Saulspoort-Mogwase area, on the north-eastern border of the Park, the reason for this being that since there is an educational centre at the Pilanesberg National Park, it would be easier, in terms of accessibility, for these communities to acquire the necessary information on sustainability and thus be able to make use of environmental education as one of the factors in achieving sustainability.

The residential areas in question are: Mabele-A-Podi, Mogwase, Doringpoort, Dikweipi, Phuting, Lekutung, Sandfontein, Welgevaal, Lerome, Mabodisa, Mositwane, Ramolope, Segakwana, Moruleng, Lesetlheng, Ga-Ramoga, Tswaaneng, Manamakgoteng and Ramatshaba (Figure 1.1).

Figure 1.2: Orientation map: The Pilanesberg National Park and its neighbouring communities



Residents of Moruleng, Mabodisa, Segakwana, Lesetlheng and Ramatshaba all belong to the the Bakgatla-Ba-Kgafela people under the leadership of Chief Pilane, and are a Tswana speaking group. In Mogwase there is a mix of people from different areas of South Africa, African states and overseas countries who came into the area because of the establishment of Sun City (then run by the Southern Sun Hotel Group) and the industrial area. This urban area was initially developed by the Bophuthatswana government to provide housing for expatriates and employees of the hotel group (Unpublished draft proposal of the Mogwase Transitional Representative Council; 1997). Sandfontein is populatedby both the Tswana group and the Pedi. The Pedi group comes from Ga-Sekhukhune in the Northern Province, and now speaks Setswana, whereas the people in Welgevaal are a mix of people from different countries and those who were displaced by the Bophuthatswana government as a strategy to marginalise the opposers of independence (Unpublished draft proposal of the Mogwase Transitional Representative Council; 1997) from where the Pilanesberg National Park is presently situated[3].

Table 1.1 : The population numbers of people in the residential areas within the study area:

Lesetlheng	2634
Mabele-A-Podi	1792
Mogwase	9995
Mogwase Bodirelo industries	262
Moruleng	9989
Moruleng-Mositwane	743
Sandfontein	5921
Welgevaal	2175
TOTAL	37617

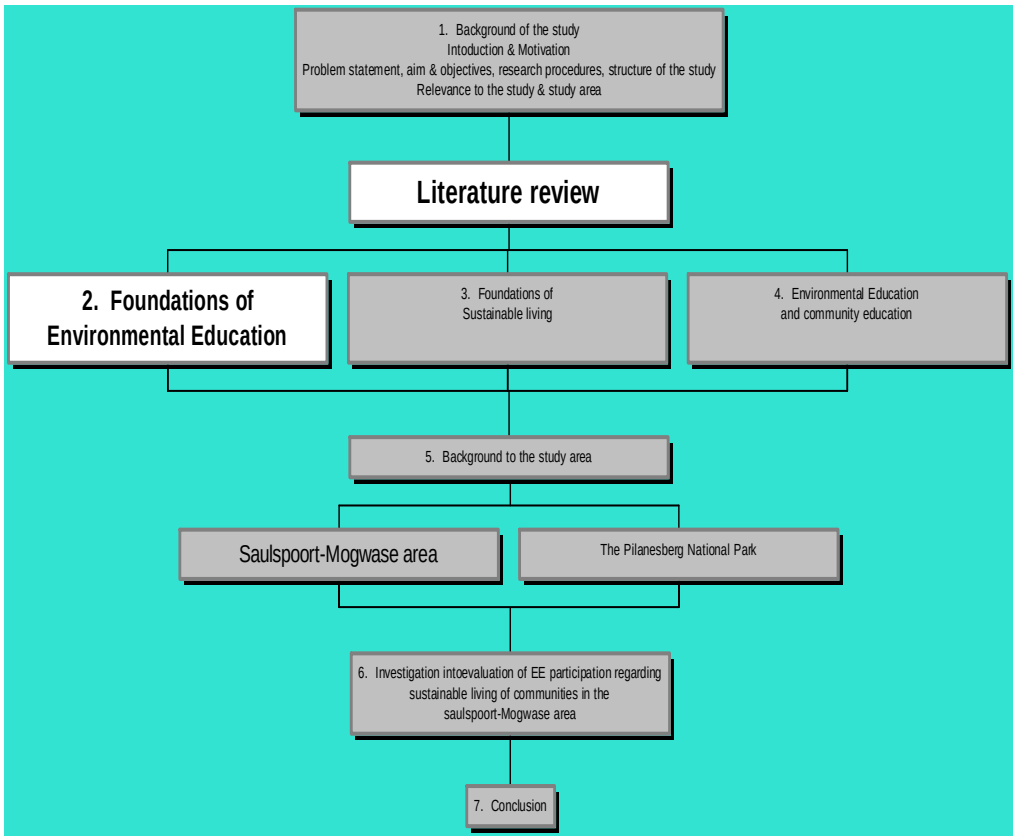
Source: Statistics South Africa: 2000

This chapter has laid a foundation for the investigation that will be carried out and it also gives some indication as to the situation with regard to environmental awareness and sustainability in this decade. The importance

[3] Information was obtained from Mr N. Pilane and Mr V. Pilane, who both are the chief's right hand men at the Bakgatla Tribal Authority.

and the role of Environmental Education regarding sustainable living has been touched in order to understand what is expected of a sustainable society as well as the problem with regard to the whole idea of sustainable development. This leads way to an attempt to expand on important concepts such as environment, education, Environmental Education and their relationship with sustainable development, which will be dealt with in chapter two of this study.

2 THE FOUNDATIONS OF ENVIRONMENTAL EDUCATION



2.1 Introduction

This chapter covers issues underlying the foundations of Environmental Education; the term “environment” is explained in detail in terms of its utility and significance. Paradigmatic conceptions of the environment as nature, resource base, a problem, place to live, biosphere and community project are discussed so as to unfold the reasoning behind the recognition of Environmental Education as an important tool to be used in a quest to achieve and maintain sustainability. The aims and types of Environmental Education are explained in order to highlight the importance of having a framework with which global communities should align themselves. Included in this chapter is the role that Environment Education plays towards achieving sustainability. Living sustainably implies that there should be principles that have to be

understood in order for people to be environmentally aware and thus to take a course of action that shows respect for the environment.

Environmental education is considered as an enlightening experience that is able to change the lifestyles of the members of a community, since by applying its principles there could be positive participation by members of the community. It can create new behavioural patterns of individuals, groups and society as a whole, towards the environment (Neal and Palmer, 1990: 5). It is therefore necessary for individuals to be environmentally aware so as to be able to conserve and appreciate their neighbourhood, before appreciating other places.

Environmental education is mainly concerned with "environmental issues" as well as "education". It is therefore imperative that these terms be closely looked at.

2.2 Two key terms

2.2.1 Environment

The term "environment", denotes many factors such as habitat, nature, ecosystem, surroundings, and biosphere, and all its components interact with each other. It also includes all the factors that have any influence on growth, behaviour and development (UNICEF, 1987 cited in Ombech, 1991: 33). Because of the context of this study, our definition will be therefore based on the principle that the environment does not exist as a sphere separate from human actions, ambitions and needs.

The combination of cultural and biophysical environments adds new dimensions to the factors that affect human growth and development (La Grange: 1994, in Fairhust, 1994:12), and thus one should adopt the approach that the environment refers to all the surroundings, which are

multi-sensual and convey more information than can be processed by the brain.

The environment thus has to be regarded as “a sphere of personal experience, a subject of interdisciplinary learning and research, a sphere of socially important action and a challenge to initiative and responsible action” (Posch, 1994a, OECD_CERI 1991, 1994, 1995 in Posch & Rauch(1998: 1)). This brings about an understanding that the self-respect and identity of human beings are much more related to and dependent on their respect for the environment and for life. It is thus important that the present generation instils the tradition that sets up a platform where young people understand that everybody lives in the middle of a life that also needs natured and taken good care of. The environment is therefore a relational concept, denoting an interrelationship between people and their surroundings, depending on how extensively the surroundings are conceived (Rabie, 1992: 84).

Although there are organisms other than people, the “natural ecosystem’s organismic detritus if fed back into the environment and recycled” (Sargent, 1994 in Gunn, 1994:82), a situation in which people are involved is quite different, because people in a way, have taken control not only of their destiny but of that of all other organisms as well. This to a large extent poses a serious problem to the concept of sustainability, due to the negative results of such control.

A phenomenographic study of discourses and practices in environmental education according to Sauvé (1988), identifies six paradigmatic conceptions of the environment, which influence the pedagogical approaches and strategies that have already been suggested and adopted by different authors and educators. These are:

- ENVIRONMENT AS "**NATURE**"— *which has to be appreciated, respected and preserved, and is the original* 'pure' environment from which all human beings have to some extent dissociated themselves and to which they must change their mental course and learn to relate so as to fulfil and enrich their quality of being. This, according to Sauvé (1998), is nature-as-a-uterus to which we should attach ourselves for our rebirth. Only an experiential approach to nature – "how nature works", according to Cohen, in Sauvé (1998) – enables human beings to blend with it in the most appropriate way. Preparing ourselves for a rebirth therefore forms a platform for a lifetime relationship — a relationship that produces what is best for both the child, in this case, humans, and mother-nature, nourishing this relationship in a manner that strengthens and enables nature to endure even for future generations.

- ENVIRONMENT AS A "**RESOURCE BASE**" — *to be managed*. The environment here is "our collective biophysical heritage which sustains the quality of our life" (Sauvé, 1998: 8). It is the responsibility of all human beings to manage this resource according to the principles of sustainable development and equitable sharing by making the necessary decisions to ensure durability, that will enable the resource base to cater even for future generations. Sustainability, according to Hall (2000: 203), stimulates thinking about durability, that is, how durable the resource base can be made to be, especially if it has to be exposed to human activity, that in most cases is attached to self-satisfaction. It is through these decisions that all human beings will come to acknowledge and appreciate the resource. People should be in a position to manage the resource base in a manner that enables it to cater for generations to come and not be further degraded.

- ENVIRONMENT AS A "**PROBLEM**" — *to be solved*. Problem-solving skills should be developed in order to preserve the quality of the environment and also to learn to restore it, since it is the only resource

available. It is our life support system, which is threatened by pollution and degradation (Sauvé, 1998). Although environmental awareness has, for over two decades, been "raised to new heights (Gunn,1994: 79), successful implementation of it has been quite a difficult exercise due to people prioritising economic value over environmental value. This clearly demonstrates that there is a need for people to identify the problems that the resource base is experiencing, so as to be in a position to identify the causes thereof and therefore to try and mitigate threats and maintain the resource base in a manner that will be beneficial to all its inhabitants.

- ENVIRONMENT AS A "**PLACE TO LIVE**" — *to know and learn about, to plan for, to take care of*. This according to Sauvé (1998) this refers to the day-to-day environment, at school, at home, in the neighbourhood, at work and at play, and it is usually characterised by its human, sociocultural, technological as well as historical components. All human beings must therefore learn not only to appreciate their immediate environment but to develop a comprehensive knowledge of the economic, social, political and physical systems of which each development in any area must take cognisance (Hall, 2000: 205), and thus also develop a sense of belonging, since "human ecology is intimately connected with people's relationship with their environment" (Hall; 2000:192) and also with all the changes that may follow. It is therefore, according to André Vernot (in Sauvé, 1998), extremely important that environmental education be associated with the development of a theory of daily life which postulates that each individual must become a "creator of, and actor in his/her own environment", thus developing the art of living in harmony within his or her own place (David Orr, in Sauvé, 1998).

- ENVIRONMENT AS THE "**BIOSPHERE**" - *in which we all live together, into the future*. Here, the environment is referred to as an object of planetary consciousness, the world of interdependence between

beings and things, which therefore calls for solidarity among all human beings. This concept of the environment-as-the-biosphere is mostly favoured by the Global Education Movement (Pike and Selby in Sauvé, 1998) and the Earth Education Movement "éducation dans une perspective planétaire", following the CIDA appellation, éducation dans une perspective mondiale", as proposed by IDRC. It has the aim of developing an understanding for the multiple dimensions of the world, thus stimulating strong and effective participation in dealing with prominent issues such as "carrying capacity", which is defined as "the maximum amount of development, use, growth, or change that a site can endure without an unacceptable alteration in the physical environment, the community's social fabric, and the local economy, and without an unacceptable decline in the quality …" (McIntosh, et al, 1995: 377). This clearly indicates that the concept of sustainability has this issue as one of its important branches.

- ENVIRONMENT AS A "**COMMUNITY PROJECT**" - *in which to get involved*. Human beings collectively belong to and share the environment and therefore must personally and collectively become involved in the use, as well as the management, of the environment on which they all depend. Any community problem-solving process that is implemented should thus tally with the characteristics of the society/community as well as with the characteristics of the environment. Sustainable living will therefore be that special kind of lifestyle that is being practised by environmentally courteous people, thus forming a sustainable community. Environmental impacts are community-specific and therefore it is incumbent on a specific community to invite all its members to study and discuss a particular problem in order to discover elements of consensus which will enable them to identify, choose and implement relevant solutions (Sauvé, 1998).

History shows that these conceptions of the environment actually coexist and can be identified in various contemporary environmental

education discourses and practices, whilst on the other hand they can be approached diachronically due to the fact that they are the result of an evolution ever time. For example, the nature education movement of the 1920's focused on the environment-as-nature conception, whilst the environment-as-a-resource conception arose in the middle of the twentieth century. The early 70's identified the environment as a problem, probably because of a lack of understanding of human-nature relationships, but at the same time, the concept of the environment as a "place-to-live" became more popular, especially with environmental psychologists (Ittelson, in Sauvé, 1998) whilst the shift was towards a renewal of the pedagogical approach of the study of the milieu “Í étude du milieu” to become more of an investigation about, from, and for the milieu (Clause in Sauvé, 1998).

Sauvé (1998) therefore suggests that a comprehensive environmental education process should take cognizance of these conceptions cumulatively, through carefully orchestrated interventions. This could result in positive participation as well as an inclusive pedagogical approach, and in a move from a narrow based type of conception to a wide democratic ideal for waste management within a community, linking the concepts of "environment-as-a-resource" and "environment-as-a-community project" and thereby broadening the intervention, especially its educational scope. The most important thing here is to deal with the educational choices of environmental education and ascertain whether they relate to and favour the person-society-environment network of relationships.

The principles of environmental education and conservation may be global but their implementation should be in a manner that suits the local society or community. This means that the members of a community should be given autonomy to simplify these principles so that they will be simple and clear, and to further choose and apply those that are relevant to the situation in the area. Importantly, it should be understood that environmental principles may be general but

environmental problems are community specific, depending on the climate, beliefs and activities of the community.

2.2.2 Education

Education is the provision of skills, knowledge and understanding to humans, in order for them to live successfully in their world (Neal & Palmer, 1990). The role of formal education in the process of environmental education is to aid the development of environmentally literate citizens who are able to cope with future challenges in a rapidly changing global and local environment (Blignaut, 1993). Formal education is also regarded as "the exploration of potentialities for change, for self-realisation, for the construction of new totalities…" (Harvey, 1995 in Hall, 2000:100), implying that understanding the principles of sustainability should enable people to see the environment, which is their resource base, from a different perspective, one which calls for responsible actions.

For the purpose of this study, the idea of a literate community is appreciated as it enables the community to participate positively. Roth (1993: 1) stresses that all members of society (of which school children are also part) need environmental literacy, which is essentially the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore, or improve the health of those systems. Therefore environmental education is perceived as "a process in which individuals gain awareness of their environment and acquire knowledge, skills values, experiences, and also the determination, which will enable them to act individually and collectively to solve present and future environmental problems" (Environmental Education, 2002: www.gdrc.org/uem/ee/1-1html:1).

The concepts of education and of the environment are quite different but both have a great influence on educational choices and approaches

to environmental education. The conceptions of education are diverse in nature but the typology of educational paradigms that have been identified and developed by Yves Betrand and Paul Valvois, as in Sauvé (1998) reveals the closeness and mutual relationship between educational and sociocultural theories, which are also closely related to environmental education, in that it is referred to as a nature, resource, problem, place-to-live, biosphere and community project. This means that it is a complex process that covers not just events but fosters "a strong underlying approach to society building as a whole" (Environmental Education, 2002: www.gdrc.org/uem/ee/1-1html:1:1). The three paradigmatic visions of education in relation to environmental education discourses or practices are:

- The rational educational paradigm, which is associated with the industrial sociocultural theory. This is characterised by the importance ascribed to objects of production, productivity, growth, and competition, within which the dominance is that of society's relation to nature (Sauvé, 1998), and thus favours the strategies of formal presentation, demonstration and task prescription. In this approach, the focus is on the authority of the teacher to transmit the knowledge, and the reproduction of the knowledge by the learner. The educator is in a position in which he/she transmits conservation, through environmental education, where the learner can be provided with awareness of a need to build partnerships and to understand NGO activities, as well as to develop participatory approaches to planning which will ensure future markets for eco-business (Environmental Education, 2002: 1:www.gdrc.org/uem/ee/1-1html:1), and therefore to make rational choices on how to handle and utilise the resource base.

- The humanistic educational paradigm focuses on the learner and the learning process, considers subjectivity and emphasises ideal personal satisfaction according to each person's potential and needs and desires. The paradigm stresses that respect and harmony be

articulated in a relationship with nature, and according to Knapp and Goodman (in Sauvé, 1998), many nature activities are related to the humanistic vision of education. The approach maintains that although people have some humanistic needs, it is important to increase their knowledge and awareness about the environment and associated challenges, and for them to develop the necessary expertise to address these challenges, and foster attitudes, motivations, and commitments towards informed decision making which will enable them to take responsible action (UNESCO-UNEP, Tbilisi Declaration, 1978) and thus indulge in activities that will mitigate further environmental degradation.

- The inventive educational paradigm, which focuses mainly on the symbiotic relationship between humans, society and nature, calls for a critical construction of knowledge as well as for the development of a relevant and useful actions, further calling for new educational practices, and cooperative learning as well as concrete problem-solving (Sauvé, 1998). Through the knowledge acquired from environmental education, there will be enhanced critical thinking, problem solving, and effective decision making (Environmental Education, 2002: www.gdrc.org/uem/ee/1-1html:1), where the society/community will be able to break it into simpler terms and incorporate into its societal norms and values. This simplification will enable all members of the community to be interested in the programme and thus to willingly act positively towards their environment,.

The paradigms articulated above stress the importance of learning and transmitting knowledge, respect and harmony as well as invention, and an understanding of the symbiotic relationship. This suggests and encourages the notion of learning about, from and for the environment and also of building a harmonious, symbiotic relationship with nature. It is thus important for members of the community such as those in the Saulspoort-Mogwase area to individually or collectively create this harmonious relationship with their immediate environment, with an

understanding that it is their resource base; their place-to-live; their biosphere on which they all depend; part of nature nature which they are also part of and must respect; as well as their problem, which they must attend to and solve. The understanding and comprehending of these paradigms can therefore make positive steps towards sustainable living possible.

Education is therefore a major priority that ensures improvements in the quality of the lives of people, poverty alleviation and inequality reduction; and environmental education is therefore "conceptualized as an integral formal facet of education and not as a separate extremely informal added component" (Wagiet, 2002: 24).

2.3 Environmental Education

Environmental education is a concept that was first highlighted and developed by Patrick Geddes, who dedicated his life to education and environment and emphasised a holistic approach that has influenced the studying of environmental education, in that many of the elements of the present day informed and enlightened teaching of the present day developed from his thinking (Leketi, in Irwin 1991:222).

In defining Environmental Education, many definitions were assembled, but the one that has proved to be the most relevant and widely accepted is that by the IUCN in 1971, which states that "Environmental Education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings". Environmental Education also entails practice in decision-making and the self-formulation of a code of behaviour about issues concerning environmental quality (IUCN, 1970 in Leketi, 1992:222).

A critique of this definition, though, is that it is rather broad and does not provide a workable statement on Environmental Education, although to some extent it has been embraced as expressing the essential elements of the concept (Fuggle in Leketi, 1992:222), which include:

- the interrelatedness of people, their culture and their biophysical surroundings
- the fact that people hold values and attitudes which inter alia relate to the environment and to behaviour towards the environment
- the notion that skills, including decision-making and the formulations of norms are an integral aspect (Irwin in Leketi, 1992:223)

Environmental Education is thus broadly viewed as a "worldwide socio-ecological phenomenon of many dimensions. It is a sophisticated and holistic concept embracing ecological knowledge and understanding, total people-environments, psychology, sociology and public participation in decision-making. It aims primarily to educate about human interaction with the environment. The bottom line of concern is human behaviour towards the environment" (Irwin, in Leketi, 1992: 223). This implies that every society and community is attached to its immediate environment though its norms and values with regard to that environment, and also embraces the psychological stand towards the environment.

Environmental Education is an important part of education and thus deserves to be integrated into all subjects and topics and to be taught at all levels of education, since it is regarded as a worldwide socio-ecological phenomenon which has many phases and is quite sophisticated and holistic in nature. Most importantly, it is a concept that needs a sound ecological knowledge and understanding. It also embraces the idea of "people having a relationship with their

environment by understanding it, as well as engaging in activities that will enhance its well being through their ethics and politics in order to make informed and coordinated participation in decision making" (Irwin, 1991:4), so that they can understand and address environmental problems. Its importance is highlighted by the appreciation that the human race is in the process of transforming nature drastically and may cause irreparable damage to our natural environment. This is why environmental education is perceived as a much needed realisation of the importance of natural resources and therefore of the need to use them correctly and wisely.

Environmental Education is a process through which people can recognise the environmental values and become able to clarify environmental concepts relating to their environment. Having understood these concepts, they will be better able to develop the skills and attitudes necessary to deal with environmental problems in their area. This implies that people should at all times be willing to protect their environment and be able to meet future environmental challenges, by focusing on more pro-environmental behaviours; thus recognising their environment as their sole resource base and therefore engaging in activities that mitigate further environmental degradation and enhance the environment rather (Hines, Hungerford &Tomera, 1986-87, Hungerford & Volk, 1990, Roth, 1970 in Leeming, Dwyer, Porter & Cobern, 1993:5).

The child, through Environmental Education, will take up the responsibilities of citizenship, with the power to act for the environment in which he or she lives (Trotman, 1978). Education should be used as a means of advancing understanding of the environment, so that the knowledge gained can be applied in working for the environment on local, national or world-wide issues (Trotman, 1978). Adults, with some authority, can work together with the younger generation and also give advice relating to norms, values and interests concerning their immediate environment.

2.3.1 Aims of Environmental Education

Communities, including scholars, should, by means of environmental education, formulate a responsible attitude towards the environment, also appreciating its beauty, and thus assume an environmental ethic. The objectives of environmental education as set out by UNESCO-UNEP (1978), are that an environmental ethic can be created through:

- fostering clear awareness of and concern about economic, social, political and ecological interdependence in both urban and rural areas; implying that communities, irrespective of their location, should strive for economic, social and political development but at the same time understand and be aware that the environment, on which they all depend, is sensitive and also depends on them for its survival and sustainability.

- providing the people with opportunities to acquire the skills, knowledge, values, attitudes and commitment that are needed to protect and improve the environment, thus opening up the communication channels for people to gain a variety of experiences and prepare themselves for a changed lifestyle; through education that includes the importance of the environment to their lives, how to identify the threats to it and also how to deal with them so as to live harmoniously with the nature around them, and

- creating new patterns of behaviour of individuals, groups and society as a whole, towards the environment: behaviour that is proof of respect and being prepared to be actively involved in finding solutions to the environmental problems.

- Environmental Education is not for a select group of people or bodies only. For it to be meaningfully applied, it should especially be brought closer, i.e. into the immediate environment, where the elements for true

environmental awareness can successfully be identified and utilised for environmental education.

The environment is the children's future and they must be encouraged to think positively about it, and to be able to reduce the damage humans do to it. They should be aware of the opportunities that exist for improving the quality of our surroundings, and thus come up with practical solutions.

Environmental Education sensitises the people to the causes and effects of problems of which, for too long, they have had little awareness, and its integration of conceptual knowledge with sensory and perceptual development is important (Keen, 1994, in Bowen, 1994).

Environmental Education increases the public awareness of the problems in this field, as well as possible solutions, and aims to lay the foundations for a fully informed and active participation of individuals in the protection of the environment and the sustainable use of natural resources. For the achievement of its objectives, environmental education should take into account specific principles:

- The environment as the common heritage of the humankind. People should realise the importance of their environment as a resource base and a place to live, which should be managed desirably and be well taken care of.

- The common duty of maintaining, protecting and improving the quality of the environment, as a contribution to the protection of human health and the safeguarding of the ecological balance, where the interdependence between human beings and nature should be taken into cognisance, so that both act in solidarity towards sustainable living.

- The need for a prudent and rational utilisation of natural resources — so as to ensure sustainability. The notion of Environmental Education sets up an arena for all to become involved and to collectively regard the environment as a project in which all individuals must strive to achieve sustainability as their goal.

- The way in which each individual can, by his or her own behaviour, particularly as a consumer, contribute to the protection of the environment, and engage in activities that will enable future generations to acquire the same benefits.

2.3.2 Types of Environmental Education

Neal and Palmer (1990: 6) postulate that environmental education takes three forms:

Education ABOUT the environment, where the nature of the area under study is discovered through investigatory and discovery approaches. In this form, environmental education is more cognitive and factual. The communities in the Saulspoort-Mowase area could learn more about the environment in their area, how it has changed over time, what caused the changes, which plants are unique to the area, how useful they are to the environment, human beings and animals.

Education FROM the environment, where the environment is used as a resource for enquiry and discovery, leading to the enhancement of the learning process, and a as source of material for realistic activities. Environmental education in this form is based on affection and appreciation. This activity can be relevantly used by the communities in the Saulspoort-Mogwase area, in trying to understand, through the educational centre at the Pilanesberg National Park, how they benefit

from the environment around them. This will create a new love for the environment and therefore lead to its conservation.

Educating FOR the environment, where the emphasis is on developing an informed concern for the environment. It requires the development of involvement to the extent that values are formed which affect behaviour. Environmental education should therefore be taken as part of a holistic approach (Neal, and Palmer, 1990) and not as an isolated element or just one of the subjects to be studied.

It will thus be appropriate to view environmental education not narrowly but rather broadly: it is interdisciplinary in nature because it fits into other disciplines. It also fosters the development of cognitive understanding, belief and attitude change. This in turn provides motivation for behavioural change and effective action (Mbaiwa & Mosojane, 1998: 137)

2.3.3 The role of Environmental Education regarding sustainable living

The concept of Education for Sustainable Development surfaced at the Rio Earth Summit and was captured in chapter 36 of Agenda 21, where the report showed the preparedness of governments, organisations and interested parties to support the acts of "promoting Education, Public Awareness, and Training" (Mckeown, 2002: http://www.esdtoolkit.org/discussion/default.html:1). It was initiated by the United Nations, Organisation for Economic Cooperation and Development and Organisation of American States.

The effects of education regarding sustainability plans have been identified as threefold, that is:

a. Implementation, where the importance of an educated citizenry is seen as a pillar for implementing informed and sustainable development and also for the enhancing of sustainability plans.

This is opposed to nations with high illiteracy, where there is a need for hard currency for the purchasing of manufactured goods from developed countries and they thus exploit their natural resources to a level beyond repair.

b. Decision-making, in which the social, economic, and environmental well-being depends largely on educated citizens, implying that the propensity to engage in "greener" development options expands as education increases.

c. Quality of life, where the economic status of families is raised by their education higher levels. (Mckeown, 2002: http://www.esdtoolkit.org/discussion/default.html:1).

According to the report of the UNESCO Intergovernmental Conference on Environmental Education in 1977, i.e. The Tbilisi Declaration, environmental education can be a major role player in the act of reforming educational systems, due to it being interdisciplinary in character and also due to its aim of linking the process of education to a closer real life situation and the surrounding environment (UNESCO, in Rauch; 2002:44).

A more important and all-inclusive term presently would be education for sustainable development and this can be achieved by means of taking environmental education as its tool, which is based on interdisciplinary learning and the realisation of the necessity of changing "learning qualities in students by which knowledge is not passively appropriated but actively constructed" (Rauch, 2002:45). Environmental education thus encourages reflective and responsible actions and the OECD through its "Environment and School Initiatives Project" has identified the following principles, that students should:

- Perceive the environment as a sphere of personal experience, and handle it in a manner that will enable future generations to also gain that experience;
- Examine the environment as a subject of inter-disciplinary learning and research;
- Shape the environment as a sphere of socially important action and interaction, where human sociocultural and economic components are dealt with in collaboration with characteristics of environmental education.
- Accept the environment as a challenge to initiate responsible action (Elliot, Posh, OECD-CERI, in Rauch, 2002:45).

The most relevant suggestion that could strengthen the usefulness of environmental education regarding sustainable development, and which could furthermore result in sustainable living, is action competence through critical thinking, a concept defined as "the ability to engage as a person, together with others, in responsible action for a more human world" (Schnack, in Rauch, 2002:45). The concept aims to promote the pupils' readiness as well as their abilities to show concern about environmental issues in a manner which is democratic, therefore enabling them to develop their own criteria for decision-making and behaviour, which will furthermore result in the ability to prevent them from adopting patterns of thinking without reflection (Breiting, in Rauch, 2002:46). Importantly, knowledge of action possibilities, confidence in one's own influence and as the wish to act are the three components whose interaction should be strongly stressed (Breiting, in Rauch, 2002:46).

Another relevant element of environmental education is that which is derived from a socio-ecological point of view – which suggests that learners should be able to develop an appropriate comprehension and understanding of the real situation; one which realises, acknowledges and accepts the dependence on individual and collective lifestyles, personal and social frameworks for action, conditions of and restrictions

on actions and options as a process where there is interaction through personal investigation and reflection (Kyburg-Graber, in Rauch, 2002:46).

According to Rauch (2002:46), there are a number of significant aspects that are inherent in the concept of sustainability, which implies that the use of resources should be used in a manner which does not jeopardise the environment nor the well being of humans living on other continents, and which does not destroy the capacity of future generations to satisfy their needs adequately.

The notion of sustainable development is often broken down into economic, social and ecological sustainability, with the latter referring to a long-term safeguarding of the natural bases of living, so that other activities such as those that fall within the social and economic spectrum should be structured in such a manner that their resultant material cycles fit into the global natural cycles and are able to be adjusted to local ecosystems. Sustainable living thus suggests that "*the lessons of ecology can, and should, be applied to economic processes…and that the economic development relies entirely on the continued well-being of the physical and social environment on which it is based* " (Hall, 2000:5)

Figure 2.1 shows the damage that is done to the physical environment, where people, perhaps out of the need for survival, embark on activities that perpetuate environmental problems such as erosion, because they value the economic value of the environment more than the integration of economic, social and environmental values. The question asked is whether these people are aware of the environmental problem caused by this economic activity and if so, how this could be mitigated. Also, are they ready to change their behaviour towards the environment?

Figure 2.1: Environmental scars caused by brick making in Saulspoort

Photo taken by Mapula Tlhagale

A new configuration of environmental education as education for sustainability could become a base and a way forward for a general educational reform, which according to de Haan and Harenberg (in Rauch, 2002: 48) implies; the desire:

- To address constructivism as a general scientific outlook (all statements on nature, humankind etc. are subject- and culture-dependent);
- To examine the guiding principles which combine the hopes, wishes and aims of societies and thus have a motivating, orientating and coordinating function;
- To understand the environment and equity issue as a corollary of an economic system that is based on competition and exploitation;
- To consider inter- and intra-generational equity as a core theme of the educational discourse;

- To better observe the process of individualism (the trend "us" to "me"); and at the same time
- To recognise the need for participation and sharing.

In essence, the role of environmental education regarding sustainable living is that the end product should be a sustainable community, which according to Hall (2000: 209), is characterised by:

1. An economic society: one that has ways of accumulating profits by embarking on businesses, industries, and institutions which are environmentally sound in all aspects, and are financially viable; which can provide training, education, and other forms of assistance to help people adjust to future needs, provide jobs and spend money within a community; which enables employees to have a voice in decisions which affect them; and is also one where residents' money remains in the community. An important issue for this study is whether there are training, education and other forms of assistance to make the community of Mogwase-Saulspoort be environmentally literate and thus act accordingly.

2. Ecological integrity – where there is harmony with natural systems through the reduction and converting of waste into non-harmful and beneficial purposes, and also the utilisation of the natural capacity of environmental resources to meet human needs, without undermining their ability to be durable.

3. Quality of life: Recognition and support for people to evolve a sense of well-being, which includes a sense of belonging, a sense of place, a sense of worth, a sense of safety, a sense of connection with nature, and provision of goods and services which meet their needs, both as they define them and as can be accommodated within the ecological integrity of natural systems.

4. Empowerment and responsibility: where people are enabled to feel empowered and to take responsibility based on a shared vision, equal opportunity, ability to access expertise and knowledge for their own needs, and a capacity to affect positively the outcome of decisions which concern them.

2.3.4 The principles underpinning Environmental Education

Sustainable development, according to UNESCO-UNEP (1976), is deemed to be the ultimate goal of the relationship between people and the environment.

The fundamental elements of sustainable development, which is a basis for sustainable living, are already included in the principles of environmental education as set forth in the Tbilisi Declaration (UNESCO-UNEP 1978), which states that there is:

- The need to consider social aspects of the environment and take into account the close links between the economy, environment and development - denoting that though societies depend on the environment as a resource base, thus making a living out of it, there should be a limit in order for them not to degrade it and therefore to live sustainably;

- The adoption of both local and global perspectives–indicating that though environmental issues are community-specific, they should be handled in conjunction with global practices and policies.

- The promotion of international solidarity, (Scoulos, in Sauvé, 1998), means that all human beings in different parts of the globe should adopt the principles of environmental education and break them down to suit their respective areas in order for

these principles to be relevant to the issues and problems at home. As part of the global village, the communities in the Saulspoort-Mogwase area should understand these principles as widely as possibly but should be able and prepared to simplify them in order to suit their own situation and lead to a better living.

International solidarity can be achieved if the following principles of environmental education as identified and adopted by UNESCO/UNEP through the Tbilisi Declaration (1978) are clearly understood and implemented in programmes at the local level, whilst ensuring that those programmes are within the context of the national and international framework. These principles suggest that environmental education should:

1. consider the environment in its totality, natural and social; that people should realise and understand that they are part of the environment and that all social activities should be handled in a way that integrates them with their environment so that they do not treat it in isolation.

2. be a continuous, lifelong process that begins at preschool level and continues through all formal and nonformal stages; implying that learning about the environment should not have any age limit and thus should be part of people's lives.

3. be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;

4. examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;

5. focus on current and potential environmental situations while taking into account the historical perspective;

6. promote the value and necessity of local, national and international cooperation in preventing and solving environmental problems;

7. explicitly consider environmental aspects in planning development and growth;

8. enable learners to have a role in planning their learning experiences and provide opportunities for making decisions and accepting consequences;

9. relate environmental sensitivity, knowledge, problem solving skills and clarification of values to every age, with special emphasis on sensitivity to the learner's community in early years;

10. help learners to discover the symptoms and real causes of environmental problems.

11. emphasise the complexity of environmental problems and thus the need to develop critical and problem solving skills.

12. utilise diverse learning environments and a broad array of educational approaches to teaching and learning about and from the environment, with due stress on practical activities and first-hand experience.

There has been, over the past few years, a shift from merely the idea of environmental protection to a need to define the concept of environmental education for sustainable development (EEFSD), though this does not discard

the existing objectives and principles of environmental education nor suggest a different educational approach (Scoullos, in Sauvé, 1988). The characteristics of Environmental Education cover the whole spectrum of important elements to be used in a quest to achieve sustainability and are therefore relevant.

It is important to integrate the protection of natural environments (i.e. for their ecological, economic or aesthetic values) with the needs and rights of human populations that are largely associated with these environments. It is also imperative that great emphasis be put on contemporary economic realities as well as on common interests regarding issues pertaining to global solidarity.

Environmental problems can only be solved if they are identified and if the communities around them are made to understand the importance of this initiative. Communities should also be involved in the decision making process of how to deal with these problems, as well as be part of the action taken to save the environment. For instance, the Kenyan government has realised that the forests within the country are in danger due to: (a) The animosity and mistrust between the communities that border forests and the national forest department; hence there are skirmishes with these communities, that are caused by illegal squatters in forests; forests often being set on fire; communities not protecting forests against illegal poachers. (b) Not enough transparency and accountability in the management of forests, where forest officers and forest guards hold their own courts, fine offenders and confiscate whatever has been illegally obtained and thisr ends up in their own pockets. (c) The Forestry Department not attracting adequate resources to enable it to run properly (Walubengu, Undated, www.fanworld.org/art_fserv.html: 2).

In attempting to solve the problem, the Forestry Department in Kenya has refocused its priorities and is aiming at increasing the forest cover to its original level of between 5% and 10% of total land cover. This is being done through activities such as re-planting the indigenous plant species in relevant areas (Walubengu, Undated, www.fanworld.org/art_fserv.html: 2).

Figure 2.1 shows that land rehabilitation can and should be done, especially when people are involved with activities that leave scars on the environment. People in the Mogwase-Saulspoort area could also embark on such an activity if they could receive support and be taught how to do it.

People become easily involved in activities that exacerbate environmental degradation but it is best for them to first understand the result of their actions and furthermore to know methods of mitigating those negative effects. The stand taken by the Kenyan government, for instance, to re-plant trees and rehabilitate spaces that have been used by humans (figure 2.2), is a desirable action that should not only be taken by the government but also by the communities themselves through self-mobilisation.

Figure 2.2: Afforestation in Kenya

Photo taken by Doris Murungu

2.3.5 Guidelines underpinning the implementation of Environmental Education

It is not good enough to simply give people information about their environment but it is also necessary to impart the information that will generate the environmentally desirable behaviour upon which the future survival of every living organism depends. Environmental education should therefore be regarded as education for sustainable development, encompassing a practical, relevant strategy for cross-curricular, holistic teaching.

Because the natural world is full of wonder, we all need to appreciate it. This can be done by tuning in to nature, a practical strategy of environmental education where people are made to feel part of the environment, thus observing it with different senses.

Another strategy is the emphasis on the value of re-using materials such as paper, and the skill needed in this activity is physical co-ordination.

People should be helped to appreciate nature as well as the living and non-living organisms coexisting in any one area, and also to learn that these things have, to a certain extent, some degree of influence on each other.

Environmental education is regarded as a process that complements sustainable living, where basic needs must be met, and in which resources should be subject to local control. Also, local communities must have a decisive voice in planning and that they should also represent themselves through their own institutions (Colchester, 1994). Environmental education should therefore be a weapon that is used simultaneously with the traditional knowledge of the local populations in order to appreciate what the environment means to the people and thus help them to use it sustainably through conservation. The practicality of environmental education is underpinned by the following guidelines:

- **The philosophy behind the environmental education programmes** – that they should be based on a philosophy that stresses the imperativeness of the integration of a conceptual knowledge with sensory and perceptual development in order to provide a clear insight into the ecological systems as well as deeper feelings towards the earth, thus producing positive environmental action. A greater motivation to obtain further knowledge that leads to a change of lifestyle is obtained through learning about the basic ecological concepts which influence people to appreciate nature (La Grange, 1994 in De Villiers, 1996: 17).

- T**he three types of environmental education** – education ***about***, ***from*** and ***for*** the environment – stress the importance of attitudes, values, skills and actions that are closely related to an individual's handling of the environment. These types of environmental education are cognitive and factual, observative and experiential, as well as affective and appreciative (La Grange, 1994: 10).

- **Experiential active learner-centred education** – which is referred to as "… that learning which begins from the point of view of the learner and which makes the learner an active participant in the process, able to influence and alter its course. Active learning involves cognitive activity, such as walking, looking and painting" (Clacherty, 1988:79).

Pre-field activities, field trips and the follow-ups are the fundamental ways of achieving an experiential active learner-centred education (Harris and Dearn, 1994, Bowen, 1994, in De Villiers, 1996: 18). It could also be a positive venture for the Pilanesberg National Park education centre to follow up this programme with nearby communities so as to ensure a thorough understanding of conservation principles and making these principles a way of

life. The following summary of guidelines for this style of education, as postulated by Neal and Palmer (1990) and Clacherty 1988, in De Villiers, 1996: 18), suggest that experiential active learner-centred education should:

1. develop the skills of inquiry and exploration in both local and contrasting environments; where learners explore all possible ways of living in harmony with the environment.

2. develop communication skills, particularly through discussion and debate, leading towards the practice of decision making and arriving at value judgements; where common ground will be found on types of actions as well as on projects to be carried out for a common purpose.

3. build an understanding of place, time, change and relationships, using concrete phenomena that pupils can perceive and relate to; by dealing with matters that relate to their resource base and not in abstract terms.

4. provide an enjoyable experience; by being participative in decision-making and implementation of plans.

5. create activities which influence the scholar's values, ethics and attitudes; and

6. provide learning experiences which are perceived as intrinsically valuable, worthwhile and significant.

A meaningful environmental programme should not only lead to an understanding of the environment and positive attitudes but should also incorporate practical knowledge of the immediate problem as well as a feeling of responsibility for the deterioration of the ecosystem (Otiende, 1991:26). It is evident that the pupils, having learned about their environment, will start to appreciate it and act positively towards it. The pupils, as the future adults, will spread this appreciation in their locality, which is a positive step towards

sustainable living. Patriotism should not only be politically acclaimed but environmentally too.

Sustainability should be used as a tool for community capacity building, where people are taught to utilise the environmental resources in a manner that will not deplete them and will thus enable those resources to be used again and again for generations to come. For example, cleaning, and avoiding polluting the rivers and reducing water consumption should also be included in the schools' curriculum. Apart from teaching the people about positive ways of handling their resources, they should also be taught about the causes and consequences of degrading the environment, just to expose them to quality education, which is an important part of quality of life (Morton, 1998: 157).

2.4 A need for a new type of living

The two main fundamental prerequisites that are being stressed presently are to secure a widespread and deeply held commitment to an ethic for sustainable living and also to integrate conservation and development, that is, to conserve so as to be able to keep our actions within the earth's capacity and development in order to enable people everywhere to enjoy long, healthy and fulfilling lives. The realisation of the earth's limited capacity as an important element to be taken cognisance of, empowers any community to consider the environment not just as "the environment" but as "their environment" rather, resulting in affection and appreciation for nature.

Figure 2.3 bears testimony to the fact that presently, people in the Saulspoort-Mogwase area are being cared for by "their" environment but are in turn not taking good care of it. It is "their" environment in the sense that they have to utilise it for survival (positive factor) but not "their" environment to look after (a negative factor). The notion that there must be a symbiotic relationship between the people and the environment is still negatively skewed.

Figure 2.3: Littering on the banks of Moruleng river.

Photo taken by Mapula Tlhagale

A new type of living can then be acquired through the following: communication, cooperation and compromise.

Communication: amongst (i) members of the society to allow debates about and for the environment; debates on issues pertaining to norms, values and beliefs on the environment; and also to identify the environmental problems in their area, the causes thereof, solutions to those problems as well as steps to be followed in the quest to overcome those problems and thus to live in harmony with their environment, which is their sole resource base. (ii) Communication between members of the community and educators, in order to acquire knowledge about how to manage their environment. (iii) Communication with the leadership and interested institutions in order to understand the framework within which to operate as well as the guidelines underpinning their participation towards the environment (Gartner, 1996:267).

Cooperation: amongst the community members, the leadership and educators to enable them to find a common ground on issues pertaining to environmental principles and guidelines, and also to work together as a team that is striving for sustainability.

Compromise: Communities are different and therefore engage in different activities that are related to their customs and beliefs. For the purpose of achieving sustainability, much will be at stake. It takes time to influence people to change their behavioural patterns. They first have to understand the reasons for change, then realise the impacts that they cause as well as the results.

Having realised these, they should be in a position to compromise regarding some of their activities and can finally become engaged in those activities that ensure sustainability. Although there could be some debate as to why human beings, especially those in undeveloped and developing countries, behave in a manner that depletes the environment, for example, poverty, which enforces people to hunt, poach, cut down trees and other plant species, a compromise from all parties will make life easier for everyone.

The participation of the people should provide the social groups, as well as individuals, with an opportunity to be actively involved at all levels in working towards the resolution of environmental problems (Mbaiwa & Mosojane, 1998: 137).

2.4.1 Environmental Education for schools

The interest of children is stimulated by the translation of the aims of environmental education into learning experiences, thus developing their curiosity and becoming encouraged to seek knowledge about the different things existing in their environment (Swartland, 1998:131).

Teaching environmental education in schools is part of community empowerment, because environmental education is regarded as “a process

aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitments and skills to work individually and collectively toward solutions of current problems and the prevention of new ones" (UNESCO-UNEP, 1976: www.uwsp.edu/natres/rwilke/aatap/Unit/1/1.31.html:1). For example, one could arrive at a situation whereby a community will be in a position to take responsibility for the management of its own riverine and wetland environments, as well as its own water consumption levels. Thus the community would be water-wise: meaning that one does not waste water, one does not pollute water, one can identify water problems and is willing to take responsibility for finding and implementing solutions to these problems (Pearson & Lubout, in Morton, 1998:151).

For people living in the Saulspoort-Mogwase area, this would mean that they should guard against such undesirable activities as, leaving taps running, and illegally installing water without proper channels and proper materials, an action that leads to water being wasted but no reports being made, for fear of being in trouble with the law.

Pupils are living in a world that is full of information and are increasingly familiar with the use of the new media and continually come across knowledge in different forms. This puts teachers in a situation where they no longer enjoy an information monopoly. A great need is that of concept mapping, which requires learners to "identify concepts, arrange the concepts in a hierachical fashion and draw connections among the concepts" (Heinze-Fry, 1998: 138). This offers people an opportunity to enhance interdisciplinary understanding, clarification of curriculum content and connections and also to develop an alternative authentic assessment to show the effects of their environmental program offerings (Heinze-Fry; 1998:141)

Individualism is also one of the social trends that is being largely influenced by the emergence of self-development as a guiding philosophy, where people are encouraged to express their own skills, interests and objectives. Also,

there is an increasing rate of change in socialisation within families, where rules are negotiated instead of being imposed (Rauch, 2002:44). This is therefore posing a challenge to schools to start adopting the principle of self-development, where concepts such as sustainable development should be made understandable and their implementation be left to individuals as a strategy towards informed, responsible decision-making, resulting in behaviour that is evident of a sense-of-belonging.

There are so many environmental problems and the causes thereof are quite multifaceted hence appropriate decisions on important environmental issues need an informed citizenry (Chacko, 1998:32). Community members, including the scholars, should be given an opportunity to be innovative and bring forth creative ideas as to how to protect and conserve the environment whilst making use of the environmental education principles as a guideline. The use of local material in solving issues such as soil erosion would be a good idea, especially for the people in the Saulspoort-Mogwase area.

It is evident that some of the environmental problems that are experienced are caused by daily activities. It is not easy to solve these problems but it is also not impossible. According to Barkhuizen (1998: 24), the idea of environmental competitions in schools motivates pupils to actively start doing something positive for the environment, since they always want to be the best and thus enjoy competitions. Through environmental competitions, the pupils develop new skills and learn to think critically. The competitions trigger an interest in pupils to do the best for the environment, whilst on the other hand that “best” is also for themselves. The pupils can be creative individually or as groups be creative and thus come up with a solution to the environmental problem.

Once the pupils become aware of how important their environment is, they should be passionate about the environment and this can pave a smooth path for them to align themselves with the environmental policy of their country. It is therefore important that schools have environmental activities that require policies, by means of pupils are directed and also understand what is

expected of them and why they do it. Environmental education is regarded as education about the universe, society and the individual, where the latter is seen as a potentially creative being, who has the capacity to develop sound as well as sustainable environmental policies (Mbaiwa & Mosojane. 1998: 134).

A major question is: why is there always a need for a sound knowledge and a clear understanding of environmental policy?

Such a policy must ensure that environmental education helps in enabling all South Africans to reorientate themselves to be able to address environmental risks and therefore take advantage of opportunities to achieve sustainable development and sustainable living (Mosidi, 1998:3). Such a policy is also helping people to understand environmental principles that should be used to improve a school's environmental performance. Schools will be encouraged to evaluate existing activities and to set, monitor and review the goals of environmental education as well as implementation framework in order to be able to act passionately towards their own resource base. It is therefore important that the community be taught about environmental education and not only the theory, but also how to put in into practice.

Environmental education can also be used in extended community-based natural resource management programmes which are aimed at helping the local people to adapt to their agricultural and development strategies and thus accommodate the conservation objectives.

New challenges for schools have emerged and Rauch (2002:44) have identified the following:

- The perception of school as a place for living, in which real life situations and the views of adolescents are addressed; and

- Opportunities for adolescents to shape the learning process as a work situation (objectives, methods and quality standards), to assume responsibility and to see themselves as players who have a constructive impact on their environment.

These challenges mean that solutions to the following questions to be found:

- How can schools convey to young people that they are important players in society and are able to leave traces?

- How can schools combine the transmission and the testing of knowledge and, in doing so, promote and appreciate simultaneously a critical and reflective attitude towards knowledge?

- How can schools contribute to a situation of social development in which the negotiation of rules and norms is becoming increasingly important?

- How can schools create situations in which young people experience the continuity of social relations and understand that cooperation is preferable to the instrumentalisation of others?

The expectation is that there should be a change of perception in the minds of members of the community and this will be possible only if the act of conscientising the people is performed at an early age. There is some hope of this happening, since the Ministry of Education in South Africa has acknowledged the need to increase the focus on environmental education within the formal curriculum (Watgiet, 2002: 27) through the establishment of the National Environmental Education Programme (NEEP), which is aimed at facilitating environmental education processes as an important educational priority within the curricula.

2.4.2 Community-based Environmental Education

Environmental Education is community-based by nature and to confirm this, Andrews, Handley and Wise (1998: 37) summarises the review of environmental education as summarised from Andrews (1995) resources for youth, and recent discussions about how the environmental education discipline can best support sustainability education, do not support this understanding. The practice of community-based environmental education responds to a need to:

a) bring the local community context into environmental education design and delivery in order to better support environmental education theory, i.e. educators should design programmes so that learners have the opportunity to practise and apply new learning.

b) respond to changes in state and federal agency management of the environment – to management by educational units, such as educational resources, as opposed to management of biological/ecological units such as game animals, forests or wetlands.

c) respond to what we know, but are not practising, about what motivates youth and adults to learn about the environment.

d) respond to what we know, but are not practising, about what makes people choose to change their behaviour related to the environment (Andrews, Handley & Wise, 1998: 37).

Maintaining a quality environment in communities depends largely on individual, voluntary actions, whether it is at home or work. People only become motivated to choose a particular action if it relates to their identified need and if they can understand how their choice will contribute towards the improvement of their own lives or of that of their community. What is

important and should be stressed is the relevance of environmental education programmes to local topics, problems and issues, so that participants can know exactly what specific actions they are to take at home or in their community and also be in possession of the skills to take those actions.

There is a huge gap in consumption rates, in available resources and in the methods of managing those resources, and according to Dankelman and Davidson (1988: 131), "*Today's reality shows that society and the environment fall for short of the ideal, in which people have access to the same amount and quality of resources in which sustainable management of the natural world is fully integrated with development and everyday's life activities*". This implies that even though resources remain the same, human activities continue to be carried out in a manner that does not complement the strive for sustainable development.

Special environmental education training can revive and strengthen traditional skills and build upon the indigenous knowledge of the people, thus transforming this indigenous knowledge into the capacity for action.

Principles of survival utilised by people who live in extreme conditions dictate that there should be a relationship of respect with nature and an acknowledgement of the equal rights of all members of the Kingdom of Creation. Many people are often involved in rituals that relate to the environment, even in just the simple task of gathering strips of bark and producing hand crafted vessels from mopani trees to be used in food preparation.

Environmental literacy, which is referred to as "*The capacity to perceive and interpret the relative health of environmental systems and to take appropriate action to maintain, restore, or improve the health of those systems* (Roth, in Green & Abrams, 1998: 118), is a basic tool for every individual to possess, as it is only through positive participation by all, that the environment can be conserved, and sustainable living be achieved. An environmentally literate citizen has been recognised by Roth (1992 in Chacko (1998:33) as one who:

- recognises environmental problems when they arrive;
- thinks before acting to correct environmental imbalances;
- rejects short-term gains when they threaten long-term benefits;
- continues to gather information about environmental issues throughout his life;
- is human and has a sense of stewardship;
- demonstrates willingness to curtail some individual privileges;
- consciously limits the size of the family;
- works to maintain diversity in the total environment;
- continually examines and re-examines the values of his or her culture in terms of new knowledge about humankind and resources.

The characteristics that have been outlined above imply that there should be a change and improvement of quality of life and quality of the environment (Chacko, 1998:34). Doing Environmental Education is important and also becomes ethically challenging, especially when it deals with issues involving class, gender, race, and culture, because environmental education impacts on students in the fullness of their lives, and not just on their environmental learning, which is usually narrowly conceived (Courtenay & Suntherland; 11998: 125). Whether children or adults, learners in environmental education programmes are of different backgrounds in terms of their socio-economic class, gender, race and culture and are therefore affected in these dimensions of their lives.

School-based environmental education programmes, in many instances, focus on practices such as lunch packaging, home and school recycling, home or school gardening, home lawn maintenance, home and school energy conservation, and individual consumption. But this setup is also faced with the situation in which, when children go home at the end of a school day, they go home to parents who are not ready and able to support, undertake, or even tolerate the ecology initiatives affecting their daily lives and home practices,

usually because of an urgent need to survive, which always suppresses the reality of ecology initiatives.

Not all parents have had the benefit of good environmental education nor the privilege of time and resources in their lives to explore environmental issues. Therefore the effectiveness of environmental education that impinges on family practices needs to start in a non-threatening and non-condemning way and this can only be achieved through good communication with parents, and also by making sure that one family's culture is not affirmed whilst another's culture is devalued or criticised. It is therefore essential that home and school greening initiatives should be supplemented by a wider social critique that will enable students to comprehend the importance of collective action and of working for structural change.

One of the steps that will highlight the development of the students' appreciation for nature is camping. But, on the other hand, students should be made aware of the fact that nature is not something that is to be experienced and protected beyond their regular living space, yet not in their own backyard. Even at home, the students must be able to show their appreciation for nature because the garden is a geographic symbol of our relationship to the earth and thus the garden speaks of the sense of our places, and the place of our senses. It is believed that gardens "*tell the story of who we are at a particular time in a particular place*" (Highwater, in Phillipe, & Rogers, 1998: 187).

Environmental education as a social function needs to retake its place as the spokesperson of original environmentalism and also to assume its condition of existence. This simply implies that environmental education should reclaim its counter-hegemonic role, and not bend towards capitalist charms, which serve to give economic consciousness to its problems.

Environmental education challenges us to give clarifications of as well as to create the connections that are found among concepts in many different disciplines, because it is interdisciplinary in nature (Courtenay, 1998). This

act will result in more effective conceptual change after an environmental education experience and will thus demonstrate other environmental goals.

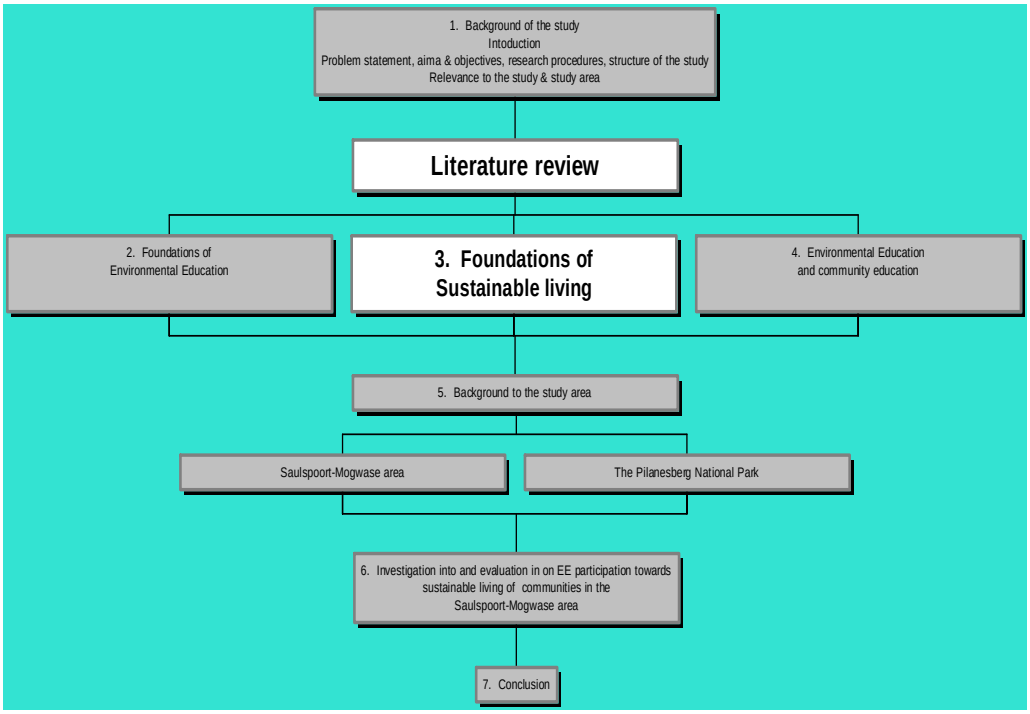
Local communities need to be given the opportunity to prepare their own sustainable development strategies. By so doing, they will be able to express their views on the issues affecting them, as well as to define their needs and aspirations, and also to formulate a plan for the development of their area to meet their social and economic needs sustainably.

Local people are unlikely to perceive the problems which face them in everyday life as “environmental” problems, though the answers arrived at by the government and other influential sources usually make assumptions about what is beneficial for the people, and about ways in which the environment can be more effectively managed (Blauert in Redclift; 1992: 36). In fact the approaches of outside agencies frequently address the problems of the agencies themselves, rather than those of the rural poor or their environments.

Human beings have been identified as part of the environment, which itself comprises different ecosystems that make up the varied resource base. The concept of Environmental Education, together with its aims and principles, clarifies all the reasons behind attempting to achieve sustainable living; hence, principles of Environmental Education are regarded as fundamental in trying to understand the concept of sustainable development, which will be explained in chapter three.

3 FOUNDATIONS OF SUSTAINABLE LIVING

"**We cannot have a beautiful place if we do not have a healthy environment**" (Minister Valli Moosa, 2000).



3.1 Introduction

The concept of sustainable development might seem new, maybe because of efforts to define it in the last two decades but, in essence, it is somewhat older than this due to its attachment to much older and established concepts such as conservation, preservation, and environmental protection, which, up to now, have been the core of the desire to prevent the deterioration and "destruction of desirable natural conditions and species" (McIntosh, Goeldner & Ritchie, 1995:375). It has been linked to environmental education, with the aim of promoting development models that are purely based on the wise use of resources, with equity and durability being placed at its heart; hence the proposal of sustainable development as the ultimate goal of the human being's relation with the environment by the United Nations' Educational,

Scientific, and Cultural Organisation (UNESCO, 1995 a) adds that environmental education should be reoriented and reshaped to meet this need (UNESCO in Sauvé, 1998). Its main objective is therefore to promote that which "provides lasting and secure livelihoods which minimize resource depletion, environmental degradation, cultural disruption and social instability" (WCED;1987 in Hall, 2000:33).

This chapter therefore examines the possibility of using environmental education as a tool to achieve sustainable living, and focuses on the problems and challenges that people encounter whilst trying to work towards sustainability. The question arising is: What makes a change towards sustainability so slow? And how far have the community of the Saulspoort-Mogwase area progressed in striving to live sustainably, and also to what extent do they make use of the education centre at the Pilanesberg National Park in this attempt?

This concept, is, according to Hall (2000:1), mainly a result of an era of ecology, which has led to the realisation in the twentieth century and the globalised world of the new millennium that the environment, economy and society are inseparably linked together, and will only provide a lasting and secure livelihood if the world community, including the Saulspoort-Mogwase area embarks on sustainable living, that is, a course that envisages a "sustainable development model for the future" (McIntosh, et al,1995:375). Such a model should become part and parcel of their lives and be a "workable approach to ensuring that we can replace what we consume and that in the process of consumption we do not create by-products that pollute or destroy the ecosystem on which future generations depend" (McIntosh, et, al, 1995: 375). *Replacing what we consume* here implies that people should engage in activities that do not destroy but rehabilitate the resources and environment, such as recycling, rehabilitation of the area used up for development: etc, acts that are indicative of how people best understand the way in which everything is tied together (Hall, 2000:4). It is therefore important to discover whether the communities in the Mogwase-Saulspoort area are indeed involved in such activities and are also aware of environmental problems in their area.

Over the years, sustainable development has become pivotal in orientating people's comprehension of the relevant issues and of ways to attend to those issues and has also motivated the thinking in the broad spectrum of environmental education, in as much that most governments have incorporated environmental education into their curricula; for example, England and Wales have established environmental education as an element of the National Curriculum 2000 (Bonnett, 2002:9), and this suggests that the lessons of ecology, if incorporated in the school curriculum, can be applied to economic processes and other development issues as a basis for sustainable living (Redclift in Hall, 2000:5).

The last three decades of the 20th century were marked with a major concern over the environment. All living organisms still depend on the same environment with the same limited resources that were being used some centuries ago. It is no surprise that the environment and resources have been depleted by the rate of population growth as well as by the rate of development, which go hand-in-hand with human use (Bonnett, 2002: 9). The destruction of this fragile ecosystem can only be stopped by a greater awareness of our environment, leading to the identification of major environmental concerns and issues as well as to the development of strategies that will address them.

The past decade has also experienced major developments in the field of environmental education globally, and the present major concern is whether people can put this type of education into practice and therefore live sustainably. The question arising from this is: *are we moving from a rhetorical kind of instruction to a more meaningful action?* "The heart of the interpretation of sustainability lies on the notion of a right relationship with nature which both conditions our attitudes towards the environment and our sense of our own identity" (Bonnett, 2002:9).

3.1.1 Towards a definition

Ecological problems have been and are still created by different patterns of human behaviour, and at present any attempt to make a transition to a sustainable future remains a social dilemma, due to the revolution caused by ideas emanating from the principles of sustainable development and survival issues (Schmuck, Schultz & Milfont, 2003:1)

The concept of sustainability came into being through the publication of *Our Common Future*, a report by the World Commission on Environment and Development, postulating that development should include the relationship between ecology, economic and social stability, which should be regarded as an effort to improve of human well-being, whilst ensuring the maintenance of the long-term viability of the environment (Santone, 2003).

Sustainable development has, since 1987, been the central focus of all major United Nations Conferences, which include summits such as:

(a) The Stockholm Conference of 1972, which focused more on human environment and identified the most important issues that are related to environmental degradation. The Declaration identified "man as both creature and moulder of his environment" (UNEP: 1972) and added that the "protection and improvement of the human environment is a major well-being of peoples and economic development throughout the world". One of the principles (Principle 2) of this Declaration states that the natural resources of the earth, including the air, water, flora and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.

(b) The 1992 Earth Summit in Rio de Janeiro, that brought about Agenda 21, a plan of action that has to be taken worldwide, and advocates through its principles that: all human beings are at the centre of concerns for sustainable development and thus are entitled to a healthy

and productive life in harmony with nature, which has been declared as "home". The Summit called for the re-orientation of environmental education towards sustainability (Tilbury, 1995: 197), and declared that states, through their own environmental and developmental policies, have the sovereign right to exploit their own resources in accordance with the Charter of the United Nations and the principles of international law. This implies that it is incumbent on every state to formulate environmental policies that are in line with those of international society and above all, to ensure that these are passed on to the local levels and are also simplified in order to be well understood by those people at the grass-roots level, making implementation possible and easier. In other words, environmental protection should constitute an integral part of the development process and should not be considered in isolation from it.

The report also emphasises the importance of achieving a higher quality of life for all people by reducing and eliminating unsustainable patterns of production and consumption (UN, 1992). An example of an unsustainable pattern of production in the Mogwase-Saulspoort area is that of brick making, where soil is being dug out to form bricks and the scarred area sprawls sideways with the need for more soil and space. With regard to unsustainable consumption in the study area, the act of making use of tree branches for fencing is witness to the fact that, where people face poverty and unemployment, principles 4 and 5 of Agenda 21 are difficult to implement. This, in turn, emphasises a strong need to expand on principle 1.d of the Rio preamble, which states that "governments should promote opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organisations and individuals, forest dwellers and women, in the development, implementation and planning of not only national forest policies in this case but all environmental policies relevant to their area". Furthermore, Agenda 21 as a policy statement for the protection of a natural resource base to be used right into the 21st century, has provided an

important framework for many countries' environment policies, including that of South Africa (Lubbe, 2003: 74)

(c) The Tbilisi Declaration, which was UNESCO's first inter-governmental conference on environmental education in cooperation with the UNEP, advocated that education should be chosen as a tool for a sustainable future, together with the outcome of the twelve principles which in essence are regarded as the foundation of the understanding of one's immediate environment. Thus people should embark on activities that will not only satisfy their needs but also enhance the environment itself. The main focus of the twelve principles is that the environment should be considered in its totality, naturally and socially, and also that there should be a continuous, lifelong process and interdisciplinary approach, implying that people's lives should be sustained by utilising the environment as the resource base but also that the same environment should be handled in a manner that will help it sustain itself wherever possible. Emphasis is put on the fact that there is a complexity of environmental problems since countries are different geographically, climatologically and socio-culturally; hence there is a need to develop critical thinking and problem-solving skills (UNESCO, 1977). Most importantly, the decisions made should be related to the culture and the value systems of different areas and communities. The success of the development of critical thinking and problem solving is again made possible by an interdisciplinary approach.

(d) The Thessaloniki Declaration, which suggests that sustainability can only be achieved through coordination and integration of efforts and that appropriate education and public awareness should be regarded as important approaches that will bring a change in behaviours and lifestyles. Another crucial issue is that of poverty and how it should be eradicated in order to achieve sustainability. Importantly, there should be partnerships among all parties concerned and this will facilitate a collective learning process, a step that, if well taken, will reorientate education in such a way that it includes all levels of formal, non-formal

and informal education within all communities of the world. Sustainability itself is seen as a moral and ethical concept within which traditional knowledge as well as cultural diversity should be acknowledged and respected. The Declaration also emphasises the importance of addressing sustainability from a holistic and interdisciplinary view, where issues pertaining to this concept are not treated in isolation but are included in all disciplines and approaches.

(e) The 2002 World Summit on Sustainable Development, which was held in Johannesburg, was a follow-up to the Rio Declaration. It focused largely on the implementation of Agenda 21 as set out in the Rio Declaration. The fact is that "poverty eradication, changing consumption and production patterns and protecting and managing the natural resource base for economic and social development and overarching objectives of and essential requirements for sustainable development" (UN, 2002:2) have been realised. This implies that the world has come to realise that the difficulty in implementing the principles of sustainable development can be ascribed to, among other factors, poverty and consumption methods, as well as to patterns of production that do not align themselves with sustainable principles. Related to this challenge is the reality that there is a huge gap between the rich and the poor and also between the developed and developing countries, resulting in a major threat to global prosperity, security and stability (UN, 2002:2)

A very thorny situation emerges from this threat to global prosperity, security and stability. It is the access to information on sustainable development and while the gap has been identified, it is clear that communities in the developing world still experience some difficulties in gaining access to information resources; this results in an uninformed society that will not change its behaviour towards the environment easily.

The mobility of capital and increases in investment flows have also posed a new challenge and opportunities for the pursuit of sustainable development

(UN, 2002:2), where a need for economic strength and survival has led to human activities that claim more and more of the resource base without taking cognisance of the negative impacts that emanate from it; and this, along with global disparities, results in communities focusing on survival issues more than on methods of mitigating any environmental problems. Failure to close the gap between the rich and the poor will thus result in people losing confidence in the advocates of sustainable development, with the thought that it is only the rich that can live sustainably, an idea that is contrary to the aim of this concept.

The Johannesburg Earth Summit, as one of its commitments, recognised the importance of building solidarity, and thus called for the promotion of dialogue and cooperation among the world's civilisations and people. The question arising from this commitment is: Is this feasible for the people living in developing countries, especially in rural areas which, even now, are not yet informed about sustainability issues and have no access to the fundamental information resources?

Amidst all the doubts and confusion, there is nevertheless hope, considering the fact that the Johannesburg Earth Summit has pledged that the implementation of the outcomes of this summit should benefit all, particularly women, youth, children and vulnerable groups and has stated that the emphasis will be on the involvement of all relevant role players, through partnerships between governments and major groups in a quest to achieve the goals of sustainable development.

One of the major challenges that face the implementation of the summit is to change the unsustainable patterns of consumption and production. This will occur by means of governments taking an initiative to promote sustainable consumption and production patterns, whilst taking account of the principle of common but differentiated responsibilities, as set out in principle 7 of the Rio Declaration (UN, 2002: 13).

3.1.2 Sustainability: What it means

There has been a tremendous amount of interest with regard to what sustainable development really is hence a number of organisations as well as individuals have arrived at many definitions in order to make this concept more understandable.

The concept is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987: 49). There is a call for the protection and conservation of the environment to ensure that development is necessary in bringing about social, economic, and environmental upliftment in an area. Because of its attachment to ecology, ecological lessons then can, and should be, applicable in terms of economic processes (Redclift, 1987 in Hall: 2000:5). This further highlights the fact that economic development “depends upon the continued well-being of the physical and social environment on which it is based” (Barber, 1987, Brookfield, 1988, Butler 1991 in Hall, 2000:5).

Sustainable development is “development that secures increases in the welfare of the current generation provided that welfare in the future does not decrease” (Peace & Warford in Sathiendrakumar, 1996;151). This implies that development can only be considered sustainable if the services of the earth are maximised to a given stock of resources. Non-renewable resources ought only to be used whilst preventing environmental degradation and improving energy efficiency.

People use the environment for various purposes such as “a natural resource base, an aesthetic unit, a waste assimilation unit and a life support system” (Sathiendrakumar, 1996:152), and it is important that society find ways of resolving the conflict between increased production and the preservation of the environment. This is a difficult task to achieve, given that widespread poverty places an intolerable pressure on the environment, since this is the only resource most people depend on as a means of survival.

Income growth is generally a prerequisite for sustainable poverty reduction, and in turn this reduction is a necessary condition for sustainable development (Sathiendrakumar, 1996:158). The implication is that, to achieve sustainable development and sustainable living, especially in many developing countries, governments should invite potential foreign funded voluntary non-governmental organisations to embark on social development programmes that may help in the improvement of the quality of life of people, especially in the rural areas, as well as involving other businesses within these countries to contribute towards poverty eradication, rural upliftment and transformation.

Since the 1970's, there has been an increase of interest in the coordination and integration of actions regarding issues of sustainability. Different organisations and individuals have tried to define this concept. One definition is that "Sustainable living is an approach to social and economic, indeed, all activities, for all societies, rich and poor, which is compatible with the preservation of the environment. It is based on a philosophy of inter-dependence, of respect for life as well as non-living parts of nature, and of responsibility for future generations" (Murcott, 1997:1): interdependence in the sense that all human beings depend on the earth, which in turn, relies on the human race for its survival. This interdependence, if correctly handled, will ensure sustainability and enable future generations also to make use of the healthy resource base.

Sustainable development seems to be a broad and difficult concept to understand. Hence, Choucri (1997) sees it as a process in which there should be management of social demands, whilst taking cognizance of the need to support life properties or mechanisms of social cohesion and resilience. This implies that people have the right to use their resource base, whilst being careful not to erode what is useful to them so that future generations can also enjoy the support of the same resource base.

The world needs a sustainable community, one that will adhere to the principles of sustainability and thus ensure that the future generation also has

the opportunity to utilise the same resources. A sustainable society is one which implicitly endorses development that is based on a long-term vision. It must also be able to forecast the results of its diverse activities to ensure that they do not break the cycles of renewal. It is a society that condones conservation, avoids the adoption of irrelevant and irreconcilable objectives and should bridge the gap that brings about disparities between the wealthy and the poor, to avoid breeding destructive disharmony (Hossain, 1995). Sustainable development for this society should be regarded as a process in which the satisfaction of its needs is met without compromising the basis of that development, which in this case is the environment (Winograd, 1995). The concept of sustainability exists where the potential of a natural system continues, because a particular management practice is carefully undertaken as the correct course of action (Carpenter, 1995).

The expectation is that all activities classed as sustainable development are aimed at improving the human condition, in such a manner that there is improvement and a change of attitude towards the environment (Munro, 1995). This change of attitude is normally brought about by gaining access to information regarding the environment, about sustainability principles as well as about goals of Environmental Education.

Sustainable living therefore implies that people live specific ways of life which strive for the ideals of humanism and preservation of Nature, and that these are based on responsibilities towards present as well as future generations of humankind. Another prerequisite for sustainable living is respect for life and non-living parts of Nature (Vavrousek, 1994). These specific ways of respect for the environment can only be implemented by a sustainable society, which establishes a dynamic harmony with nature and is based on the use of renewable resources of energy and raw materials. Each civilisation, society, nation, ethnic group should try to identify its own way of sustainable living, taking cognizance of its own cultural roots, economic conditions, value system and environmental situation, and also respecting the common cultural issues and knowledge.

Sustainability is regarded as a new way of life for the global community and also as an approach to social and economic activities for all societies, where each of the activities is based on sound management of the environment and conservation is a priority for enhancing the ability of that environment to sustain itself (Kato, 1994). This calls for an adjustment of economic growth in order to remain within the framework set by natural replenishable systems and implies that human beings should adapt to a lifestyle in which careful husbandry of critical resources and technological advances as well as redistribution of resources and power, guarantees the necessary and adequate conditions of liveability for present as well as future generations (O'Riordan & Yaeger, 1994).

3.1.2 Issues surrounding sustainability

The early 1980's saw the emergence of a new concept of development as a response to negative experiences of development, known as sustainable development, which refers to "a certain pace of development which can be sustained even in the very long run" (Mitra, 1998: 196), where it becomes a process in which the "social welfare of the people can be maximised with the minimum damage to the ecology and environment". Sustainable development can thus not be achieved without being closely intertwined with environmental conservation, a goal that can only be achieved by using environmental education as a tool for sustainable living. Communities at a local level have to choose their own pace, based on what they have in their immediate environment and what they want to achieve. Global sustainability principles should be considered and understood so that they can be implemented at a pace that is acceptable and relevant to the members of the community, which will thus sustain itself and the resource base as well.

The 1990's have seen a growing concern over environmental degradation and this has led to greater support for an educational approach which will consider both environmental improvement and education for sustainability as a long-term goal (Tilbury, 1995). It thus focuses more on the "integration of the complementary disciplines of environmental education and development of

education and requires reconciliation between environmental conservation and economic development" (Tilbury, 1995: 196) and will give greater prominence to social, political and economic aims of environmental education in the 1990's (Tilbury, 1995). The importance of education is that it promotes sustainable development and also improves the ability of people to deal with both environmental and developmental issues (Tilbury, 1995).

The concept of sustainable development is quite a complex one, given that it interacts with four separate systems which to a larger extent, affect each other: and these are: ecosystem function and change, economic performance and change, technological performance and change and social performance and change. In striving to find a future sustainable path, the interrelationship of these systems should be analysed. Presently, the world's ecosystems are being threatened and degraded to the level at which the earth's carrying capacity is being overexceeded and overpressurised by human activities; and this implies that the decline in ecosystem functions will without any doubt result in a decline in the ecosystem services (Standberg & Brandt, 2001:220). Understanding the concept of sustainability not only refers to knowing and understanding the principles thereof, but also, importantly, to understanding one's ecosystem and how it functions. Then the members of communities will understand methods of bringing about economic change without threatening the ecosystem, and will engage in social activities that will also enhance their ecosystem and environment.

Sustainable development as a concept has and is still gaining a lot of popularity. At the heart of it is a debate that evolves around the issues of population-resources-environment. It is evident that the world population is increasing at a faster rate although the resources stay the same. Although this concept of sustainability is gaining popularity, the question arising is whether this popularity is only at a global level and is spread evenly at the local level. Hence for this study the question should be asked whether there is a fixed community programme for environmental education and conservation for the Mogwase-Saulspoort communities. While the focus is placed more on whether the earth can sustain more people (Aguirre, 2002:

923), this researcher would like to consider the question of population-resources-environment from another angle: how best can people utilise their environment as a resource-base with limited pressure and damage to it? This approach does consider at whether the earth can cope with the population increase that is being experienced at present but rather examines what can be done to make local people understand the principles of sustainability and thus formulate a framework or model which they will make use of in achieving sustainability, whilst acknowledging that their needs can be quite different from those of other communities.

Economic growth can in some respects be good for the environment, especially if great care is taken and proactive actions are carried out; conversely, it can also cause great harm to the environment if development and utilisation is carried out in ignorance of actions that could exacerbate environmental problems (Strandberg & Brandt, 2001). Any approaches towards sustainable living thus depend entirely on how careful and proactive communities can be in dealing with the economic growth in their area.

Research and development within the field of technological performance and change have come up with new concepts and analytical tools such as industrial ecology, environmental management systems, life cycle assessment, design for environment, materials flow analysis, eco-efficiency, dematerialisation etc, in searching for a radical change in energy and material production, design and consumption (Strandberg & Brandt, 2001: 221).

Social performance is thus constituted through democracy, equality, inter-and intragenerational equity, social integration, education, health and full employment (Strandberg & Brandt, 2001:221). In most African rural areas, some of these are quite difficult to comprehend, due to a number of traditional laws. Also, environmental degradation, according to Sathiendrakumar (1996:151), “is largely the result of governmental and market failure and wide spread of poverty, which places an intolerable stress on the environment”.

People use the environment for various purposes such as “a natural resource base, an aesthetic unit, a waste assimilation unit and a life support system” (Sathiendrakumar, 1996:152), and it is important that the society find ways of resolving the conflict between increased production and the preservation of the environment, a difficult task to achieve, given that the wide spread of poverty places an intolerable pressure on the environment, since this is the only resource most people depend on as a means of survival.

The global community is widely discussing and approving the concept of sustainable development but the environmental degradation continues, worse than ever before (Seidl, 2000:768). There has been a series of meetings and conferences on sustainable development, where bulky reports have been produced; however, there is a concern whether these reports and literature on sustainability reach the people at the ground level, and whether communication channels are accessible to everyone. It becomes very difficult to comprehend the issues of sustainability if the information resource base is not accessible to everyone, particularly those people living in the rural and semi-rural areas of the developing countries.

Luhmann (1982 in Seidl, 2000: 769) states that “According to sociological applications of system theory, society consists of different systems and subsystems, each of which has its particular environment. Each subsystem is characterised by internal versions of the entire system, by a particular density or social interaction and communication, and by different patterns of cognition, views of problems, and approaches to solutions. Hence, facts, events, and problems acquire a multiplicity of meanings in different perspectives”. It is therefore important that communities recognise that they are quite different in nature and that their resource base is also different from that of others. This suggests that each community should make use of its own beliefs, values, traditions and culture in formulating a framework to be used in trying to achieve sustainability.

Sustainability seems to be a difficult concept to comprehend at present because of the economic situation of people, especially those that live in rural

areas. Their actions are not purposely aimed at degrading the environment but at making ends meet, as "Deepening poverty is associated with environmental effects that tend to have immediate and local implications for the health and welfare of the communities concerned" (Perrings & Ansuategi, 2000: 19).

The opinion that the major threats to environmentally unsustainable development are the poverty-driven depletion of environmental resources in the developing world and the consumption-driven pollution of the biosphere by the developed world was expressed by The Brudland Report (WCED, 1987 in Perrings & Ansuategi, 2000: 19), implying that the poor depend on and are entirely responsible for the degradation of, forests, wetlands, rangelands, and coastal zones to meet their basic survival needs. This becomes a challenge for the society at large to come up with a reasonable approach to poverty alleviation in order to make it easier for members of communities to be prepared to change attitudes towards their environment.

"The earth is not something we inherit from our parents but rather something we have on loan from our children" (Flint, 2002:1). This simply implies that we owe it to our children to engage in activities that will satisfy our needs but will still enable our future generations to also utilise and enjoy the same resource base. It is thus evident that should the present generation not change their attitude towards their resource base, the future generation is faced with the challenge of a depleted environment, which will be deteriorating at an even more faster rate.

A cross-disciplinary awareness programme is a prerequisite for the achievement of sustainability and some of the characteristics pertaining to this, according to Flint (2002: 1), are:

- The knowledge to comprehend the linkages among all living creatures, and their dependency on each other as well as on the physical environment.

- The understanding of basic principles that govern natural systems and the ability to apply this knowledge to the limits to, and the major factors associated with, earth's capacity to sustain life.

- The talent for seeing "the big picture" in employing scientific method and technology as organising tools to enhance a community's capacity for using local assets to build sustainable communities.

- The respect for the "public way of knowing" as well as the "expert way of knowing".

- The understanding of how people organise as family, community, etc., and of how activities used to meet needs affect societal health, environment, and the quality of life of present & future generations.

One of the many educational challenges for sustainable societies is that "a constructive educational response must include a comprehensive, coordinated attempt to redefine the human role in nature and re-examine many assumptions, values, and actions we have long taken for granted" (Orr, 1992 in Haury, 1998: 1).

Importantly, each student should be thoroughly prepared to lead a sustainable life in which they should focus on placing the ecosystems concepts at the intellectual centre of all disciplines (Disinger, 1993 in Haury, 1998: 1).

Very many organisations and institutions have performed a pivotal action, by trying not only to understand the guidelines underpinning the concept of sustainable development but also to outline an array of strategic actions and initiatives that promote education for sustainability. One such institution is a US Presidential Council on Sustainable Development, which produced a report "Education for Sustainability: An agenda for action", calling for:

1. Lifelong learning in both formal and non-formal educational settings. This theme emphasises the fact that, in order for a community to be sustainable, education should be lifelong; that is, education for sustainability should be inclusive of learners at school and members of the community at large regardless of their age, education level, gender and status.

2. Interdisciplinary approaches that provide themes to integrate content and issues across disciplines and curricula. This implies that in formal education, environmental education should be integrated into all disciplines and activities of the schools, whilst at home, it should be integrated in the norms and the value systems of the society. This will also minimise the possibility of a clash of interests, where pupils cannot implement what they have learnt at school in their home environment.

3. Systems thinking as a concept for developing skills in problem solving, conflict resolution, consensus building, information management, interpersonal expression, and critical and creative thinking, where the strategies derived are relevant to the societal value system and are feasible.

4. Partnerships between educational institutions and broader communities, where these institutions will be actively involved in information distribution to the local people and also help people to access information that is useful to their economic and social activities.

5. Multicultural perspectives on sustainability and approaches to problem solving.

6. Empowerment of individuals and groups for responsible action as citizens and communities. This will help with the formation of environmental clubs in the area, where people can obtain information on environmental issues and can communicate in order to make

informed decision making concerning matters of the environment and problem solving approaches.

3.1.4 Environmental Education and sustainable living

There is a continuous growth in public awareness of the projects of environmental education and education for sustainable development in educational policy. Though there has been little attention in the literature of the philosophy of education, a symposium at the European Conference of Educational Research during September 2000 in Edinburgh attempted to address this matter by exploring the complexities and commonalities of both these projects. The most important issue that was addressed was: "to what extent, or in what sense, can we use education to bring about sustainable development?" (Reid, 2002:5).

This question fits well into the South African situation, where the majority of the population has little or no formal education. Also the question of poverty, unemployment and lack of resources has a major role to play in these communities, especially those that are in the rural areas. For them life holds no other alternative because there is no other way of survival except to exploit the available resources - an act which is not done purposely but as a means of survival.

There is a belief that conservation, which is defined as "*The management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations… Thus conservation is positive, embracing preservation, maintenance, sustainable utilisation, restoration and enhancement of the natural environment*" (IUCN, 1980 in Dankelman and Davidson, 1988:114), and development are opposite things, whereas they are essential parts of one indispensable process: sustainable living, which is regarded as a strategy towards caring for the earth, the place in which we live in, and is generally based on three points:

Survival: where people want a satisfactory life for all with some of development and must therefore learn to live differently.

Dependency on resources, so as to meet people's basic and vital needs, where these needs become unmet if the resources are diminished or used in a manner that results in them deteriorating; an indication that people have not been and are not living sustainably.

A need not to loose, by learning to take good care of the earth and thus to live sustainably and where even the benefits of development are distributed equitably (Dankelman and Davidson, 1988:4).

Conservation is thus a process that must be applied cross-sectorally, not an activity sector in its own right. In the case of sectors directly responsible for the management of living resources, conservation is that aspect of management which makes sure that utilisation of resources is sustainable and which also safeguards the ecological processes and diversity essential for the maintenance of the resources concerned. In the case of other sectors – such as health, industry and energy – conservation is that aspect of management which ensures that full sustainable advantage is derived from the living resource base and that activities are so located and conducted in such a manner that this resource base is responsibly dealt with, and therefore well maintained (IUCN in Dankelman and Davidson, 1988:114).

Conservation and sustainability depend on each other because if resources are conserved, there will be a prospect of improving the living standards of the people. "*Learning to understand the natural world and the human place in it can only be an active process through which our sense of what counts as going with the grain of nature is continuously constituted and recreated*" (Foster, 2001a:153).

Human beings interact with nature from the time of birth whilst education is experienced throughout life. Environmental awareness and stimulated imagination therefore contribute towards making all human beings more

environmentally responsible, thus creating a firm platform for choosing, individually and collectively, those courses of action which make sustainability possible and therefore rejecting those which do not; and also directing people towards studies that will empower them to explore, both imaginatively and critically from within, their own commitments and understandings that concern their position in nature and with nature (Foster, 2001a:155).

It is important to direct environmental education towards sustainable living, thus making people more hospitable towards their environment, therefore handling it in a desirable manner. This strengthens the philosophy of "*education for sustainability*", which according to Huckle and Sterling, in Foster (2001a:155) *"helps people and communities to examine critically the technologies, systems of economic production, cultural systems of reproduction, laws and politics, and ideas and ideologies they currently employ for living with the rest of nature. It also helps them reflect and act on viable alternatives*". This education, if reoriented towards sustainability, will assist in the determination of a more positive and successful future, resulting in people being able to live sustainably by becoming flexible, resilient, creative and gaining participatory skills as well as competence.

The concept of sustainability will therefore be most clearly understood if its activities are clear in the minds of people. Also, equally important, is the fact that it should be definable and comprehensible in terms of human activities that have an impact on the carrying capacities of the resource base on which all people depend.

Living sustainably therefore means that we need to understand and accept the consequences of being part of a greater community by becoming more aware of the effects our decisions have on other sectors (plants and animals). It should be a guiding principle for all people, and should ultimately become a new pattern for all individuals, communities, nations and the world itself. People therefore need to change their attitudes and practices significantly, in order to be able to adopt this new pattern. Environmental education

programmes are necessary in this regard, as they demonstrate and ensure the importance of an ethic for living sustainably.

3.1.5 Problems and challenges of sustainable living

"Sustainable living" needs to be understood as far more than the latest buzz phrase. This only becomes possible by acknowledging the fact that it should be diverse enough to be applicable to diverse cultural settings (Barry, 1998:33). It must comprise common global principles, though at local level those principles must be broken down and simplified to enable them to be incorporated into the area's values, norms, beliefs and the everyday life of its people.

Environmental problems could be associated with politics, cultural issues and the social structure of the area. They sometimes arise partly due to conflicting but deeply held views on how decision-making processes should be conducted and what the outcomes should be.

It is sometimes difficult to accept change, especially when people have no alternatives and are continuously immersed in poverty, which is a major challenge facing the world today (UN, 2002:9). At times, there are uncertainties about the change and the future that create resistance to environmental decision-making. For instance, in African societies, it may be difficult to change from what has been perceived as a culture, in the name of sustainability. For example, one environmental principle is that all human beings should by every means avoid activities that lead to soil erosion, but, considering what the tradition and culture of many Africans stipulate, there could be a clash of ideas.

Another problem of sustainability is the lack of enough information about the concept itself. Most communities, when approached about a change of lifestyles, will simply regard this as a punishment or oppression, especially if the proposed lifestyle is something that will restrict them from doing certain

activities. In this regard, environmental education is usually not perceived as a choice and a new beginning but as an end to life.

Another problem that faces sustainable living is lack of participation in environmental decision making. It is obvious that due to cultural diversity, environmental issues can trigger heated value conflicts among members of any community, hence it is imperative always to have a well represented community in making environmental decisions.

The inability to identify environmental issues is another problem that affects sustainable living. It becomes difficult for communities to be able to address these issues when they are not aware of them and their causes. In most cases, people themselves do not realise that to a certain extent, it is their actions that cause or even exacerbate the environmental impacts. For instance, figure 3.1 shows that in most of the rural areas of South Africa, community members do not have camps for their livestock; instead they live with their livestock in the residential areas and these roam about freely.

Figure 3.1: Livestock roaming in the village.

Photo taken by Mapula Tlhagale

It gives people pleasure to see them on a daily basis, not realising that having these livestock in their residential area could accelerate erosion as well as spread dangerous diseases such as foot and mouth, mad-cow disease etc. Another serious matter that needs to be addressed by the environmental professionals is that these people use such livestock for food without the animals first being checked by health officials regarding their health status: for instance, it is a tradition that a cow is slaughtered for ceremonies like funerals, weddings, ancestral offerings, and normally these cows are bought from local residents (subsistence farmers).

While it is easier for the developed countries to address environmental issues using a more theory-based approach, other parts of the world, especially developing and undeveloped countries, experience a number of factors that disturb the progress and anticipated achievements of environmental education. The difficulty could be due to the difference in the economic setup of each country as well as to the cultural customs of communities living in those areas.

In these parts of the world, people are constrained by socioeconomic boundaries, low literacy rates and high poverty levels and these factors inhibit their opportunity for effective participation in the teaming process for sustainable living (Daudi, 1998:82). Figure 3.2 shows that due to poverty, children from poverty-stricken homes will usually go and look for some food in piles of waste, with the hope of also finding some toys, as parents cannot afford to buy these. Cultural factors to a large extent also affect the environmental education programmes.

Acting irresponsibly also causes the status of the environment to deteriorate, where people and institutions throw trash into places that are accessible, for example figure 3.2. This act is unhealthy for the environment as well as for people. The question arises: Why would a hospital dump its waste in an area that will be easily accessible to children, without destroying dangerous instruments such as needles etc? How ready is the hospital to change to sustainable living?

Figure 3.2: A child playing with hospital waste

Photo taken by Mapula Tlhagale

It is not impossible for communities such as those in the Saulspoort-Mogwase area to deal with environmental issues and live in harmony with their environment. The challenge is for their leaders and the environmentalists to spread the necessary information about environmental education so as to enable these people to understand the concept, accept change and thus live in harmony with their resource base.

Taking environmental education and sustainability into one's frame of mind is a step that enables people in any area to understand the importance of caring for their environment and willingly engaging in activities that will support their environment. This new frame of mind can be a tool that is used by both young and old, where people will understand that rivers should not be polluted as this could be a health hazard for members of the community (figure 3.3).

Figure 3.3: Children exposed to polluted water

Photo taken by Mapula Tlhagale

A study that was done in Pakistan revealed some challenges facing environmental education teaching for the area and some of those challenges, as stipulated by Daudi (1998:87-89) are found to be relevant to the situation in South Africa, especially to that of the previously disadvantaged communities. These challenges facing environmental educationists are:

1. Environmental matters are directly related to the daily realities of life. The development of environmental literacy therefore becomes the first and foremost step to be taken. This will lead to creating, as well as raising, environmental awareness in the citizens.

2. Research activities such as needs assessments and academic research into the monitoring and evaluation of current activities in order to develop future programmes, need to be promoted.

3. The development of networks and databases of environmental professionals for sharing experiences and for exchange of information regarding endeavours in the field of environmental education.

4. Environmental education should be given strong legislative and financial support by the government in order to establish the movement more firmly in the realm of education.

5. To achieve the goals of environmental education, a primary change in behaviour and the gaining of problem solving skills by learners, a nucleus of human resources needs to be developed.

6. Educational activities in the formal education sector need to be coordinated and promoted by educational NGO's through assessing the models demonstrated by private schools and adapting these for the government school system.

7. The role of academia needs to be prominent in developing resource material for environmental education at all levels.

8. Other channels of non-formal and informal education need to be explored and utilised, for reaching out to those people who are not at school.

9. The private institutions, corporate sector, business an industry need to support educational activities for the environment and its related issues by providing financial and administrative support to those who require it.

10. Electronic and print media reach out to a large number of people through channels such as newspapers, radio and television. This can provide a very effective tool in creating and raising environmental awareness.

Sustainable living can only be achieved if all members of the community, i.e. youth, adults, men and women, participate in positive actions towards their environment via community development models which basically follow the following steps:

1. Define problem and set goals, whereby community members, together with other environmental organizations/institutions, come together, identify environmental problems as well as the causes thereof and having arrived at their vision, then set their goals.

2. Gather information: communities, through their representatives, can then embark on research that will enable them, after having identified the causes of the problems, to find appropriate solutions and means of mitigation.

3. Set possible alternative solutions: From the information gathered, decisions can be taken as to which solutions are relevant and appropriate and are beneficial to both the resource base and the community.

4. Choose a course of action, where different activities can now be tabled and be implemented. It is important to agree on evaluation measures and feedback in order to ensure progress and to check whether the programme is viable.

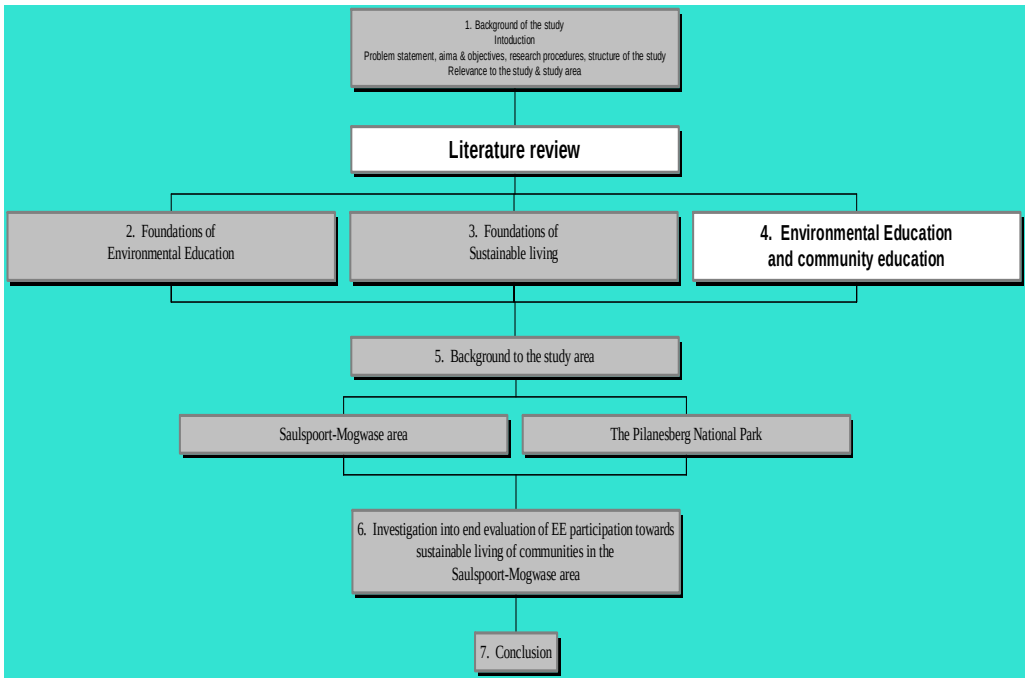
These steps, if correctly followed, could help communities solve the environmental problems in their area. The most important aspect is for each community to have a vision, and also to know how to involve a diverse representation of people as well as how to gather facts and arrive at diverse solutions (Andrews, et al, 1998: 39).

Environmental education enables people to care for nature. "Care" here could be used in three different contexts: cognitive, emotional and behavioural, i.e., to care that, to care about and to care for, respectively (Brown, 1998:52). "*If education is seen as a long term systematic learning that gives people knowledge and problem-solving skills to improve the quality of their lives, then environmental education will help people make informed choices about natural resource use*" (Daudi, 1998:82).

In summary: the concept of sustainable development seems to be quite difficult to comprehend, especially when looking at the question of accessibility. The difficulty is also brought about by the many different definitions that have come to the forefront although they all possess some common elements: the people and their activities, the environment, the resource base on which these people depend, and the future. Different major conferences have also tried to acquaint the nations with the principles of this concept. In all these conferences and meetings, it has been evident that communities have different backgrounds and cultures, meaning that education for these different communities should take cognisance of their cultures, norms and values. This relationship between Environment Education and the cultures of the people will be considered in chapter four in discussing the possibility of community education.

4 ENVIRONMENTAL EDUCATION AND COMMUNITY EDUCATION

"**We are all participants in making the world what it is and will be**" (Reid, 2002:7).



4.1 Introduction

The statement above clearly denotes that the world is what it is today partly because of activities by human beings: politically, technologically, scientifically, historically, socially etc. The environmental state of the earth is beyond any largely doubt the end-product of acts by people.

This chapter aims to consider all the aspects that are related to the relationship between environmental education and community education, and to discuss how education fits into the norms, values, beliefs and morals of a particular society. The issue of time and space cannot be omitted because of its importance with regard to the norms and values of any society. Of utmost importance is the relationship between the people and their environment as well as the role that women play in the preservation of nature. This role is particularly examined because of the trend which is still strong amongst the

black communities, that men go away to work and women are left behind to look after and cater for their families.

Children, as the future of any society or country, also cannot be left out and if we are to regard environmental education and sustainability as a frame of mind, then it must start with a young mind. The influence of a settlement on the environment, as well as a case study on environmental education, have been included in this chapter to justify the importance of including all members of the community in this daunting task of changing towards sustainability. It was mentioned earlier on that "we are all participants in making the world what it is and will be" (Reid, 2002: 7); therefore, elements such as energy, technology and agriculture are also looked at as part of the macro-environment that has an impact on how we handle our environment.

Environmental education is closely related to community education because of people's relationship with the environment. The term "*environment*", is a component of the concept of "environmental systems, which refers to a collection of things confined in a particular space and also working together in a regular relation (Hopkins; 1978:125). The physical and environmental systems are identified from the surrounding of the earth to its crust. On the same earth, people are able to discover the materials they need to make use of, so as to make life possible. Environmental education is therefore interdisciplinary in nature, in that it encompasses all activities of human beings. It therefore becomes part of their lives, since education is part of one's life.

Whilst environmental educationists are concerned with learning from, about and for the environment, the communities are more interested and involved in transferring knowledge about norms, values, beliefs, morals, approaches towards life and interactions with the resource base, as well as in studying effects on the environment. The relationship between community education and environmental education therefore brings about a consideration of themes such as simple systems – food, water, health and energy. This relationship can also lead to the realisation that all living organisms interrelate and that the

people's capacity for deliberate and rapid action can bring about a decision that will often change the equilibrium as well as incur environmental costs that cannot be repaid (Hopkins, 1978: 125).

Education and environmental education are interdisciplinary in character and both focus on themes that are environmental as well as global. Environmental awareness and knowledge is brought about by an effective implementation, which results in "*communicating content, through language, skills acquisition and a variety of methods across the curriculum*" (Fairhust, 1994: 1). Environmental education concentrates on methods of making the world a better place for all living things. The educator should stress the significance of a time-space perspective, to complement the planned processes. Environmental education programmes strive to combine the geographical skills of fieldwork, numeracy, graphicacy and literacy into a meaningful learning experience (Fairhurst, 1994: 1).

4.2 Time, space and Environmental Education

One of the aspects of human residence is space, which is more concerned with the geometrical spatial relationships as well as with patterns of surface movement. Although there are certain areas of this system that have remained, and are still likely to remain, a separate discipline, beyond the scope of a broader course of environmental studies, there is much in common between the two, as environmental *studies "should include practice in geographical methods, especially in field techniques and mapwork*." (Hopkins, 1978: 126). Environmental education is therefore multidisciplinary in nature, because the term "environment", comprises biophysical, human and cultural components, with humans as an integral part of the ecosystem and dependent on it for their biological needs, whilst at the same time they are cultural beings, and therefore part of a cultural environment (Brundland, Gro Harlem (ed.), in Bowen, 1994).

4.3 People and the environment

Human beings, just like other living creatures, depend on the environment and therefore influence it in one way or other; hence every human society has beliefs, myths and attitudes about the environment. There are more people living on earth today than have ever lived at any one time and this causes resources to be more rapidly used up than ever before. Wastes are also more rapidly produced (Botkin & Keller, 1882: 1).

Every social action and decision in relation to the environment requires a greater understanding of basic environmental principles because, in order to be able to arrive at the solutions to the environmental problems, people should know and have an understanding of environmental systems as well as of their rates of change (Botkin & Keller, 1982: 4). Obviously, all human species depend on the environment as a resource base and most importantly, it is largely through human beings that the resource base will survive. Man possesses, above all living organisms, the capacity to set out goals for ensuring sustainability, as well as the capacity to implement strategies to achieve those goals. Above all, the human being has the capacity to control and manage all human activities and can thus shape and direct them towards achieving sustainable living.

Earth, being the only habitat that we have, possesses limited resources and therefore needs positive and responsible actions by human beings. Because earth, as a planet, has been profoundly changed by life, its atmosphere, oceans, and sediments are strongly modulated by life and are, in every respect, very different from what they would look like if they were on a lifeless planet (Botkin & Keller, 1982: 4).

Figure 4.1: Dumping site on the bank of the Moruleng river

Photo taken by Mapula Tlhagale

"*Every citizen has a right to a healthy environment*" (Bill of Rights, 1996:10). This means that further environmental degradation should be prevented. Environmental issues such as risks and problems that arise from the political, economic and other social aspects of our lives, which prohibit a healthy environment, should be solved or be avoided. There must be development of sustainable living practices among all South Africans (Bill of Rights, 1996: 8). Scarcity and depletion of water, the erosion of agricultural soils, the production of wastes, air pollution, desertification, and the general irreversible degradation and despoliation of the land should be minimised. Figure 4.1 shows the dumping of waste on the banks of the Moruleng river, in Saulspoort, on the north eastern border of the Pilanesberg National Park. This poses a health hazard to the community of Saulspoort. Environmental

education programmes which only transfer information about environmental issues are not sufficient and are therefore futile, resulting in information that is not utilised and is consequently useless.

Human activities keep on increasing and decreasing the magnitude and frequency of natural earth processes, and it is a wellknown fact that the ultimate fate of every species on earth is extinction. On the other hand, the effects of human use and interest in the land may, to a great extent, change the rate of extinction, if and only if those interests and use are responsibly applied. Since the effects of land use tend to be cumulative, we have an obligation to future generations to minimise its negative effects (Botkin & Keller, 1982:11), and the following uses have been identified:

- Fire, which is mainly used for cooking, heating and agricultural purposes, contributes greatly towards the loss of forests as well as of the human attachment to nature.

- Hunting, influenced by the need for food and clothing, leads to the extinction of animal species.

- Agriculture, more especially subsistence farming, helps people to survive but also leads to environmental degradation, which is a major element that needs to be dealt with.

- Development, in order to achieve economic growth.

We should always bear in mind that every action that we undertake, has more than one effect on our environment.

Environmental education is, therefore, “a process through which we might enable all human beings and future generations to positively respond to environmental issues in ways that might foster change towards sustainable

community life in a healthy environment" (Janse van Rensburg and Lotz, 1998:10).

Members of a community should demonstrate a critical understanding of patterns of social development, and make sound judgements about the development, utilisation and management of resources. If an environment poses a danger to the health and well-being of people, they will not be able to live meaningful lives.

4.3.1 Women and the environment

> "***Most rural women are directly dependent on their immediate environment, and their own skills in using it, for the daily necessities of life***" (Rochelean, in Dankelman Davidson, 1988: xi).

Women are the daily managers of the living environment because of the tasks that historically and culturally have been assigned to them, such as agriculture, animal husbandry and tasks in the household. They are therefore knowledgeable about plants, animals and ecological processes around them. They are also active in the commercial sectors of the society and the raw materials, such as the wood, clay and grass that they use in rural enterprises, are vulnerable to environmental degradation as well as contamination. The Brundland report (Khan & Sejane, 2002: 24) suggests that threats to the sustainable use of resources come as much from inequalities in peoples' access to resources as from sheer numbers. This, to a certain extent, is a true statement if we consider the accessibility of different kinds of sources such as internet, libraries, and other materials, especially for members of communities in the Mogwase-Saulspoort area. Because of the difficult cycles of poverty and inappropriate development, poor people, and mostly women, have been forced to be involved in activities that induce further destruction (Aido, 1985 in Dankelman and Davidson, 1988: xii) because of their ability and the necessity of meeting the basic needs of their families in "a world that is increasingly hostile to the poor" (Khan & Sejane, 2001:24). Women, even if they possess the knowledge about living sustainably, sometimes have no

choice but to exploit natural resources for survival (Dankelman & Davidson, 1988).

The world's poorest households are increasingly maintained by women and even in situations where men are heads of families, there is a huge reliance on contributions by women (Khan & Sejane, 2002:24). Traditionally, women have been the workforce, the backbone of the family, because men go out to work, and enter the commercial world. Women are therefore left to manage life at home and as the gap between the rich and the poor increases and continues to do so, so does the gap between men and women, among the poor (Khan & Sejane, 2002:24). Women usually become involved in the following three main tasks:

1. *Survival tasks*: tasks that are essential for daily life, for example, growing of food crops and gathering wood for fuel, as well as enlightening and advising children with respect to those tasks.

2. *Household tasks*: where they become responsible for home activities such as preparing food, cleaning, etc. They are also a strong force in the upbringing of children: teaching them about the culture, values and norms as well as about how to become future household managers.

3. *Income generation*: where they contribute substantially towards the family budget through income-generating activities, for example food processing and production of handicrafts. Therefore, women, in most cases, are confined to the environments of the home by their daily domestic tasks. One important aspect of the economic system in most African states is that of togetherness, a concept in which people form clubs to communicate important issues and furthermore cooperate in decision-making and problem-solving processes.

All activities are carried out in groups with a common goal, for example, women may come together to help one another in ploughing the fields, in church to help one another with religious and family matters; hence the emergence of burial clubs, in which people contribute a certain amount on a monthly basis to support one another in a time of grief. Men have also adopted this concept hence it is a common trend that one family is a member of at least one or two clubs in the area, depending on whether they can afford to contribute towards each club. The idea stems from the realisation that in union, poverty can be beaten. This trend is also strong within the Mogwase-Saulspoort area (see appendix B), where clubs are a popular activity.

Women are the world's most important food producers. They are also conscious of the health of the environment on which they are dependent, due to their involvement in the domestic activities, which include being closer to the environment. They therefore have a tremendous amount of knowledge about their environment, as well as about sustainable agriculture, which is "*food production which respects both the natural and social environment and is based on wise use of natural and renewable resources with moderate exploitation*" (Shiva, in Dankelman and Davidson, 1988: 19).

Water is an important and necessary resource which is used for many purposes, for example: sanitation and waste disposal, child care, vegetable growing and food processing. In a rural village, water will also be used for traditional beer making, which is one of the major economic activities in the area. Rural people use wood for making fire. Even though the villages on the eastern border of the Pilanesberg National Park are electrified, wood is still much used for activities such as: beer making, making fire during ceremonies such as preparation for funerals and weddings, building kraals for cattle and goats (livestock are still kept in the village), erecting fences as well as for medicinal purposes by the traditional healers and other members of the community.

4.3.2 Children and a sense of place

Research has indicated that caring about the natural environment is an essential prerequisite for environmental action. People can only care about the natural environment when they have a sense of place, which refers to a sentiment of belonging to one's milieu. Therefore people will feel for their own environment sentiments of familiarity, territoriality, and protection.

Positive experiences of place and a sense of place contribute significantly to the way children understand the world around them and their relationship to it. These experiences foster a sense of wonder and thus enhance a person's understanding and appreciation of the natural environment (Wilson, 1998: 248).

It is common and essential that children feel a strong attachment to the places where they spend much of their time. This tends to affect their attitudes and values towards the world of nature and their role as caretakers and guardians of the land (Nabham and Trimble in Wilson, 1998).

The importance of a sense of place for environmental education is that the single most important factor in developing a personal concern for the environment is childhood experiences in an out-of-doors situation (Palmer and Tanner, in Wilson, 1998). It is assumed that people make sense out of their experiences and in doing so create their own reality (Tshikesho, 1997: 314). Therefore, fostering a sense of place plays a critical role in achieving long-term environmental education goals. Schools, homes, and neighbourhoods should provide natural habitats that nourish children's awareness and actively support their learning and development as human beings (Wilson, 1998).

"*It has been realised that most of the programs of conservation and environmental education fails because of failing to identify the appropriate target groups. If the target group identified is not correct, then the whole programme fails to acquire the expected results. The traditional knowledge used by the local people should be incorporated while dealing with the*

sensitive conservation issues where the sentiments of the local people are attached and this will help greatly to get the support of the local people. The role of environmental education making the tribal people realise their continued role is very much on the card" (Talukdar, 1997: 312).

4.3.3 Human settlement and the environment

It has been realised that one of the causes of environmental problems is population growth, which creates among other problems, pollution, congestion due to shortages of shelter, inadequate planning and lack of correct environmental management. People are able to exploit the different habitats of the world in a quest to satisfy their wide dietary range, as omnivores. This in turn causes changes that are sometimes harmful to the environment. Of importance to the relationship between the earth and the human race is the "*carrying capacity*", which changes with time, when the earth itself has its limits (Aseka, 1991: 105).

There is a relationship between the human population and the environment. In an ecological perspective, human beings are a part of the environment and thus interact actively with its components. They tend to have a greater ability to think and manipulate the environment than any other organisms because of a more developed brain; hence they are able to survive and therefore to realise the role that they play in and with the environment. The interaction between people and the environment is thus brought about by them being part of it and also by the necessity of obtaining their basic needs such as food, shelter, and clothing (Shiundu, 1991: 77).

4.3.4 Environmental Education in Guangzhou, the People's Republic of China: A case study

A case study in Guangzhou in the People's Republic of China focused on themes that were apparent as being of major importance. The key role players identified six themes which were perceived to be of major importance in the primarily utilitarian conception of environmental education as:

- a response to environmental degradation and practical needs of a society;
- a knowledge-focused area of scientific learning in the national interest;
- a field of study with Chinese characteristics;
- a political tool and an element in national propaganda;
- an administratively led and centrally controlled innovation; and
- a field of study in conflict with mainstream education.

All these themes are conceptualised within a tripartite framework emphasising the political factor, the socio-economic factor and the environmental factor. This case study is seen as relevant to the present study as it contains elements that are common to the Southern African situation, especially the rural areas. The study area comprises mostly rural settings and the case study can be used by the local people themselves and the municipality of the area.

4.3.4.1 Nature of Environmental Education in Guangzhou

The city of Guangzhou follows the central government policies including those on education but it is allowed some independence, following Deng's Open Door policy and therefore develops its own versions of centrally defined curricula of which environmental education is one, with the aims and objectives thereof being set out in a publication of the Guangzhou Environmental Protection Propaganda and Education Committee (GEPPEC) in 1990, which followed on from broad directions that were set by the State Education Commission in Beijing. This programme promotes the following aims:

- Knowledge of environmental protection as a national policy;
- Understanding that the environment is part of the resources of China;

- Awareness that an environment implies certain values;
- Awareness that environmental protection is a form of societal ethics; and
- Knowledge that environmental protection is controlled by legislation.

These aims were formulated together with the consideration and acknowledgement of the social contexts and beliefs of the residents in Guangzhou, an act that supports the remark by Wong (in Stimpson and Wong, 2001:394), that "*there should be an integration of science and sentiment. Learning should seek to develop a love for nature, rare species and the landscape…*".

The case study shows the determination of a country to conscientise its people about looking properly after their own environment, a practice that should be adopted by all governments, not only on paper, but practically. Follow-ups should be carried out and residents will come to realise and strongly feel that they have a right to live sustainably.

Being environmentally aware but not knowing how to implement this knowledge results in environmental degradation. Sometimes people are more engaged in survival matters than in communal matters; for example, figure 4.2 shows a street that is not well kept. The question to be asked is: are the people involved in any kind of environmental programme or are they interested in issues of sustainability? If not, how will this space be sustained for their use?

Because of the realisation of the role they play in the environment, human beings, over time, have realised and developed more effective ways of using and controlling it the relationship between survival and care for all natural resources.

Figure 4.2: Erosion on the street

Photo taken by Mapula Tlhagale

Some of the problems that the environment has experienced were, and are, caused by among other reasons: thoughtlessness, negligence and selfishness through overusage of their habitat. High rates of population growth in many parts of the world have exacerbated this situation (Shiundu, 1991:77); for example, land cultivation or farming have led to reductions in soil fertility and productive capability, though this can be ascribed to a need to survive.

People occupy land and this is why the environment is affected, as they scramble for the inadequate space available in their area. The focus is directed towards the carrying capacity of the said land, which means "*the number of the people that the land is capable of supporting without any danger of depression*" (Shiundu, 1991:81).

Unemployment contributes towards environmental degradation. In desperation, people turn to such practices such as overusage of resources;

for example, deforestation and erosion are caused by a need for building material, carving, wood and many other economic necessities (figure 4.3). According to Shiundu (1991: 87), human beings make life possible for themselves by using the environment for the following purposes:

- As a source of food through hunting and the use of wild fruit as well as vegetation.
- As a source of the air we breathe; which calls for less pollution in the air.
- As a source of resources such as oil and minerals;
- As a means of travel and communication;
- To provide space for shelter and other socio-economic and physical activities; for example, in Saulspoort, many people have embarked on brick making for development, which is a necessity in the area. This activity leaves scars on the environment and there is no means to rehabilitate the scarred area; instead, the damage sprawls sideways in a quest to find more soil for this purpose.
- As a source of artistic satisfaction, where arts and crafts are made from trees and stone.
- As a setting for relaxation and leisure activities; and
- As an appropriate ambience to stimulate human thought, research and discovery.

The utilisation of the environment is so huge and universal that it becomes difficult to ignore the consequences that the earth and its population are facing if no action is taken. It is therefore the duty of people to look after the environment from which they can benefit so much.

Figure 4.3: People in the business of brick making

Photo taken by Mapula Tlhagale

Figure 4.4 stresses the fact that poverty leads to people embarking on activities such as using trees for fencing. People still have a sense of owning the environment, even if it means using the resource base negatively.

Figure 4.4: A fence made from branches of *Acacia tortilis*

Photo taken by Mapula Tlhagale

4.3.5 Energy, technology and the environment

As human population growth moves into the 21st century, the field of environmental education faces more complex challenges (continuous environmental degradation, significant human population increases, a greater understanding of how people think and learn) than ever before. There is also a change in the tools and technologies that are available to educators for interacting with and learning about the environment.

Technology is very important in the teaching of environmental education, especially with the use of Virtual Reality (VR). It is "*a multi-sensory experience, within a computer-created environment, allowing intuitive interactions with data, so the artificial world can be experienced as reality*" (McLellan 1996, Wickens and Baker 1993 in Malarney, 1997:195). Virtual environments are "*places where a learner can have any number of different*

learning experiences, involving natural behaviors and utilising multiple senses" (Bricken and Byrne, Bricken in Malarney, 1997: 195) and are designed in such a way that they become interactive and responsive to the user. They exist as an array of different types, ranging from 2½ dimensional fly-throughs to 3-dimensional immersive environments (Malarney, 1998:195).

VR can provide opportunities for both teaching and learning, by means of which learners can be physically and psychologically immersed into a virtual environment through sensory devices and thus act as the first person without a computer screen acting as the interface. This allows experiences to be subjective, with actions flowing directly out of the participants' perception of the world rather than through conscious interaction (Winn, in Malarney, 1998). The use of VR in an environmental education programme can therefore assist with simulations that reflect true-to-life experiences and events that cannot be normally experienced.

Unavoidable are an increase in the world's population; the need for development as well as the need to protect the ecosystems sustaining the capacity of the world's production; and also the importance of achieving a development that is environmentally sustainable. Technologies that are resource efficient and cost-effective are important in the quest for sustainable development.

Technology should lead to improved production systems. Also important is the fact that processes that use resources more efficiently should at the same time produce fewer wastes, that is, achieving more with less. Therefore, Environmentally Sound Technologies (EST's) play a major role in improving productivity whilst protecting the environment (UNEP, 1998)

Environments are influenced by the interactions between human beings and the environment as well as by interactions with resources. The concepts of the relationship between technology and environmental education not only focus on environmental awareness in technology, but also put the use and application of technology in the prevention of environmental degradation and

solving environmental problems together. The relation between technology and the environment is thus emphasised by a strong methodological link between action competencies in environmental education and the problem solving orientation to technology.

Although it has been always difficult to use advanced technology in the rural areas such as those next to the Pilanesberg National Park, a technological strategy such as simulation can be used. This is one method that brings people closer to their environments without them even realising that they are physically and practically not dealing with the environment at that time. Lessons learned from these experiences should conscientise them and drive them towards acting desirably in real life situations.

4.3.6 Agriculture and the environment

Agriculture is expected to perform in two major ways, which many observers regard as a mutual contradiction. On one hand, agricultural systems have to deliver development and intensification so as to feed a growing population from the land, whose resources are finite. These systems are expected to meet the aspirations as well as the needs of the rural populations of the world now, whilst at the same time providing a variety and quantity of food to ballooning populations. On the other hand, they are the guardians of many of the world's environments, which keep the stock of natural resources secure for the current production and also protect "global commons" – the soil, air, water and biological diversity (Gibbon, Lake & Stocking, 1995).

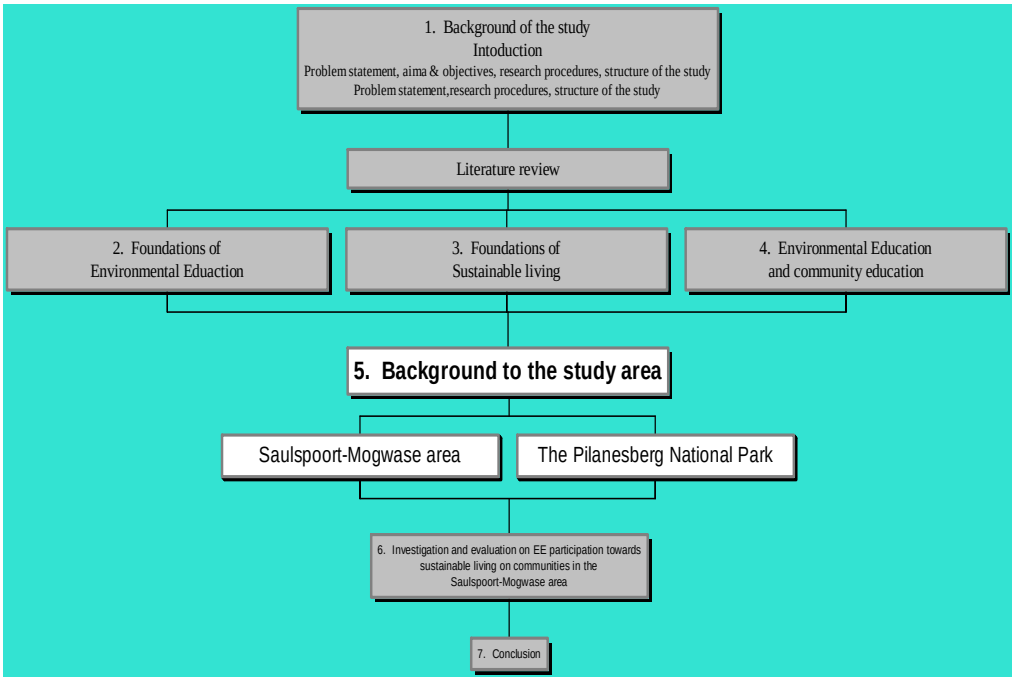
There is generally less concern about the environmental costs that arise with the expansion of food, or agro-supplies. The negative effects of farming are therefore extended into the future due to the depletion of resources that are limited and speedily fading away because of the agricultural activities of the human population.

4.4 The earth's environmental systems and natural resources

The word “system” refers to a collection of things that are confined to a particular space but working together in a regular relation. Therefore, environmental systems refer to both the physical and human systems that can be identified from the surrounding of the earth up to its crust (Ogeno, 1991:54). Due to the context of this study, the main focus will be on the physical environmental systems.

Throughout this chapter, different elements such as human settlement, agriculture and children have been identified as having an impact on the environment and it has been noted that the environment also has an impact on them. Women as managers of homes, especially in African tradition, have a certain amount of knowledge about the environment, whilst children are the future beneficiaries of the environment and thus it is important to include them in the teachings of Environmental Education. Environmental awareness is very important for the people of the world and because the Mogwase-Saulspoort area is also part of the global community its inhabitants should also live sustainably. The Pilanesberg National Park is one facility that should be helping the people of this area to receive this awareness. In the following chapter (five), the background of this facility and the community will be described in detail.

5 CHAPTER FIVE: BACKGROUND TO THE PILANESBERG NATIONAL PARK AND THE SAULSPOORT - MOGWASE AREA



5.1 History of the area

This chapter aims at giving an indication of the historical background of the study area, and also of racial groups residing in the area. This should make it easier for readers to understand some of the norms and values, the traditions as well as the economic situation of the people in order to understand why some activities mentioned in the text are carried out differently.

Saulspoort (Moruleng) – meaning the place of the Marula, because of the many Marula trees that are found in this area – is a rural area belonging to the Bakgatla-Ba-Kgafela tribe, a Tswana linguistic group that established itself in this area between 1700 and 1750, coming from Chief Maselwane's area in Hammanskraal near Pretoria. For some time they paid tribute to the Batlhako tribe, which ruled the area, until the Bakgatla-Ba-Kgafela won the war between themselves and the Batlhako over not wanting to pay tribute any longer. The tribe was ruled by Chief Pilane, after whom the Park was named,

between 1825 and 1850 and presently it is still under the chieftainship of Chief Nyalala Pilane (North West Conservation, 1995).

The Bakgatla-Ba-Kgafela own a relatively large area but the area on which this study is focussed is Saulspoort and it is divided into many smaller villages. The following ones feature in this study: Moruleng, Mabodisa, Phuting, Segakwana, Lerome, Dikweipi, Manamakgotha, Madutle (Welgevaal), Mabele-A-Podi, Lesetlheng and Ramatshaba, Tswaaneng, Sandfontein, Lekutung, Phuting, Welgevaal, Ga-Ramoga.

Mogwase is an urban township that was established in 1979 by the erstwhile Bophuthatswana National Development Corporation which was funded by the then Bophuthatswana government. The initial purpose of this township was to provide housing for expatriates and employees of the Southern Sun Hotel group and those of Bodirelo industrial area (Mogwase Transitional Representative Council. 1997). The township is situated along the eastern part of the Manyane gate of the Pilanesberg National Park.

The Pilanesberg National Park was first conceived in 1969 and was officially opened on 08 December 1979. This Park, which is almost circular in shape, is situated on the eroded remains of a 1 200 million year old extinct alkaline volcanic crater, the second of its kind in the world. It was restocked with almost 6000 animals of 21 species during Operation Genesis - the largest ever game translocation during that time (North West Conservation & Jacana Education:1995). The Park has an education centre to teach the people about the Park itself and about conservation.

5.2 Environmental Education in the Pilanesberg National Park

A meaningful environmental programme should not only lead to an understanding of the environment and to positive attitudes but should also incorporate practical knowledge of the immediate problem as well as a feeling of responsibility for the deterioration of the ecosystem (Otiende, 1991:26). It is evident that the pupils, having learned about their environment, will start to

appreciate it and act positively towards it. The pupils, as the future adults, will spread this appreciation in their locality, which is a positive step towards sustainable living.

The park strives to use environmental education in order to enable the people to develop, through appropriate education, a national sense of environmental awareness, which is behaviourally effective in conservation terms, and which satisfies the identified needs and demands of the people (Northwest T. E. C.). It also strives to promote an awareness by people of their relationship with nature, and therefore to enable them to live sustainably within the physical and biological constraints of the environment.

The Pilanesberg National Park Education Centre mainly targets school children, through the teacher, at all levels of schooling. It not only designs and run courses for teachers but has also designed a back-up system of materials, resources, advice and encouragement. It is also targeting pre-service teachers, namely, students at the University of North West as well as colleges of education and also practising teachers. The third target is the pupils from grade 1 up to grade 12.

The strategies that are being used by the education centre include:

1. Courses, programmes and content that attempt to strike a balance between cognitive, affective and psychomotor domains;

2. Emphasis on teacher-pupil, pupil-pupil interaction (promoting group work, cooperation, problem-solving, participation);

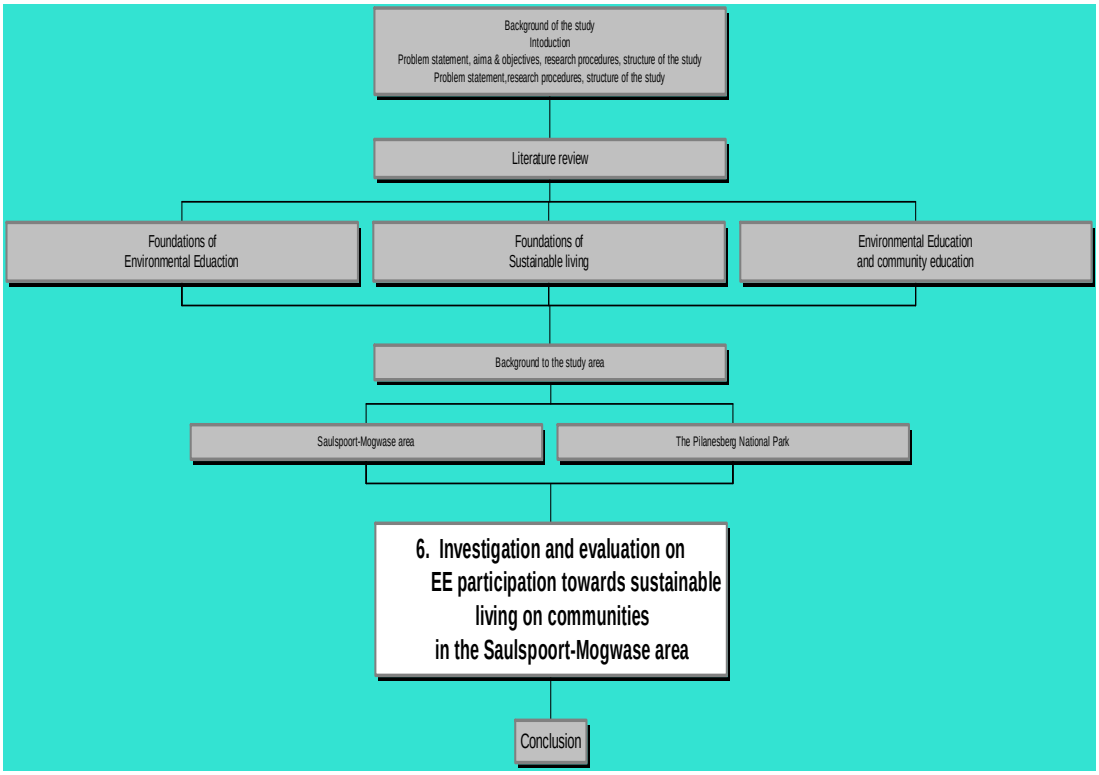
3. Relevance: Course and programme build on participants' knowledge and experience;

4. Optimal use of the natural environment in the Parks and where possible, areas outside this boundary; and

5. General Rule: Limit the teaching to materials that can be effectively taught in the school classroom.

Observation using different senses is mainly used, in order to make the pupils tune in to nature and thus appreciate it and learn to respect and conserve it. Interpersonal skills are used to make people communicate easily so as to come to terms with reality. Physical coordination is also called on in order to emphasise the value of reusing the materials.

6. INVESTIGATION INTO AND EVALUATION OF EE PARTICIPATION TOWARDS SUSTAINABLE LIVING OF COMMUNITIES IN THE SAULSPOORT- MOGWASE AREA



6.1 Introduction

The chapter outlines the procedures taken in the investigation into and evaluation of Environmental Education towards sustainable living of the communities in the study area. It explains the empirical investigation and how the questionnaire was constructed. The content validation of the questionnaire is described with a specific focus on issues of qualitative and quantitative investigation. Also described is the research sample of the investigation and how the questionnaires and interviews were conducted. Having explained how the investigation was conducted, its results are discussed and their implications are considered.

Sustainable living is a concept that needs basic understanding of environmental education and its principles as indicated in chapters two and three, and its success relies entirely on the participation of members of the community regarding issues of the environment, taking cognizance of the fact that there are more people living on earth today than have ever lived before (Botkin & Keller, 1982:1). This section provides answers to questions that have been asked throughout the literature review (chapters two, three and four) and also gives some indications as to how possible it is to achieve sustainability, especially in the Saulspoort-Mogwase area. Empirical investigation and construction and the validation of the questionnaire, the qualitative investigation, the research sample, the administering of the questionnaire as well as the conduction of the interviews are described.

6.2 Empirical investigation and construction of the questionnaire

This deals with the results from the empirical investigation as carried out by a questionnaire. A pilot study was done by distributing the questionnaires among 40 first year tourism students. This exercise was performed to identify and probably isolate possible mistakes, misunderstandings and shortcomings in the questionnaire. This pilot investigation was aimed at improving and enhancing the definition and meaning of concepts so as to increase the possible reliability of the answers from respondents. After some changes and improvements, copies were made for distribution to the sample.

Questions were constructed for schools (see Appendix A) in the study area: these were based on environmental education awareness and the level of participation in implementing this knowledge as a means of mitigation of environmental degradation as discussed in chapters two, three and four; with the aim of achieving sustainable living in their area.

6.3 Content validation of the questionnaires

The questionnaire for this study enquires about the interrelatedness of people, their culture and their biophysical surroundings, since they hold values and

attitudes which relate to the environment (chapter two); their behaviour towards the environment; and also whether they have the skills to make the right decisions, as well as to implement those decisions (Irwin, 1991:15). This process, fundamentally, is to determine whether the issues discussed in chapters two and three "adequately sample the content domain of the constructs" (Rumrill & Cook; 2001:46): do they test what they purport to measure?

6.4 Qualitative investigation

This study was designed to determine whether the problem, which is the acquisition of information on environmental education through the environmental education centre at the Pilanesberg National Park, as well as skills in mitigating environmental degradation, is being and can be solved.

6.5 Content validation of the interview questionnaires

The design of this questionnaire began with the "assumption that the perspective of others is meaningful, knowable, and able to be made explicit" (Patton, 2002: 341). An interview guide list to questions or issues that were to be "explored in the course of an interview was constructed to ensure that the same basic lines of inquiry are pursued with each person or group interviewed" (Patton, 2002:341). The focus of the questionnaire, as discussed in chapters two, three and four, was on environmental awareness as well as on the level of participation in combating environmental problems. Environmental education for sustainable living is a concept that must be applied cross-sectorally, as pointed out in chapter four and the participation of Park authorities and that of local tribal authorities in achieving sustainability was investigated. To obtain information on whether people were hospitable towards their environment (which can be regarded as nature, resource base, a problem, place to live, biosphere and community project (chapter two)), follow-up questions were posed during interviews and this enabled the interviewer to acquire thick (i.e. detailed) information for the purpose of the investigation.

6.6 The research sample

There are 40 schools within the study area and all were used as a sample, which is "a given number of subjects who are selected from a defined population and are presumed to be representative of the population" (Bellini & Rumrill, 1999 in Rumrill & Cook, 2001: 29). In terms of the discussion in chapter two, which stresses the importance of environmental education for schools, a need to select schools as part of a defined population was identified. This in turn validates the evaluation of the investigation and becomes a random cluster sampling because all schools in the study area were given an "equal and independent chance of being included in the sample" (Rumrill & Cook, 2001:30).

The questionnaire survey method was used for schools since it provides a "quantitative description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2003:153). The purpose was to determine the awareness of environmental issues as well as the level of participation and preparedness of schools to deal with environmental problems. The method chosen is cross-sectional and quite economic and also allowed for a rapid turnaround in data collection, as questionnaires were delivered collectively to the Mogwase Circuit Education Office to be distributed to schools through the schools' principals, who visit this office at least once a week; and in turn the completed questionnaires were submitted to and collected from this office.

A field survey was conducted by means of in-depth interviews with members of the community, Park authorities, tribal and municipal authorities in a quest to acquire "rich and thick descriptions of meanings that the research participants ascribe to their experiences" (Bogdan & Biklen, 1992; Denzin & Lincoln, 1994; Strauss & Corbin, 1990 in Rumrill & Cook, 2001: 159). In this work, an explanatory qualitative method was followed, the purpose of which was an understanding of the concept of environmental education and sustainability. This understanding was brought about by a continuous reformulation of questions to allow flexibility in trying to acquire unbiased,

correct information, thus becoming an "interview protocol that is flexible enough to incorporate modifications and changes as the data collection process continues" (Denzin & Lincoln, 1994; Glesne & Peshkin, 1992 in Rumrill & Cook, 2001: 167).

Women, as indicated in chapter four, are an important element in the development of skills concerning the development and implementation of principles of sustainability. They are the daily managers of the living environment because of the tasks that have been, for centuries, assigned to them. They are also, particularly within the black cultures, the frontrunners in the development, the organisation and the maintenance of social clubs. In the Saulspoort-Mogwase area alone, there are more than 300 social clubs. Although men have shown interest and have followed suit, there are still more women members of these clubs.

All churches in the study area have women's leagues (Bomme-Ba-Seaparo) which not only deal with issues of the church but with other issues that need attention in the villages as well. From this sector, 23 groups were identified to be interviewed.

The inclusion of women in the sample is seen as a major contributor towards the representative, accurate and reliable outcome of the investigation. Again a cluster area sampling technique was used, which "permits us to extract groups from the universe to ensure a sample that represents the entire universe and avoids the bias of selecting only those people located in a particular region" (Haring, Lounsbury & Frazier, 1992:70). The Saulspoort-Mogwase area is divided into 19 villages and therefore four social clubs from each village were used in a sample, totalling to 76 social clubs. Letters of invitation to interviews were distributed through the tribesmen (Dikgosana) to the selected social clubs.

In another attempt to ensure a valid investigation, in-depth interviews were also held with 5 representatives from 8 youth clubs within the study area.

6.7 Administration of the questionnaires

During the week of 01-05 July, 2002, a pilot study was done by distributing questionnaires among 40 first year tourism students at the University of Pretoria. The aim of the exercise was to eliminate shortcomings and also to improve and enhance the definition and meaning of concepts so as to increase the possible reliability of the answers from respondents and final versions were then made after some changes and modifications.

The failing of the initial questionnaire was that it contained too many questions that would deter people from filling it out. Also, some duplication occurred but these were rectified.

In the week of July 22-26 2002, a letter asking permission to allow an investigation to be carried out at all schools falling within the study area were personally delivered to the Rustenburg Education Office and then to the Mogwase Circuit Education Office. 40 questionnaires were delivered to the Mogwase Circuit Education Office for principals to deliver to schools. Other letters asking permission to conduct interviews with the Bakgatla-Ba-Kgafela tribal authority, the Pilanesberg Natinal Park Board and the Moses Kotane Municipality were also personally delivered.

Of the 40 questionnaires that were distributed, 34 were returned, which represents 85% and can be regarded as an above average response and can therefore also be regarded as highly reliable.

6.8 Conducting the interviews

Interviews with the Bakgatla-Ba-Kgafela Tribal Authority were conducted on 14 March 2003 whilst those with the Pilanesberg National Park authorities and Moses Kotane Municipality were conducted on the 28 March 2003. These were carried out by the author personally. The Bakgatla-Ba-Kgafela Tribal Authority was represented by Mr Nonoko Pilane and Mr Marobe. When a question was asked the interviewer allowed either of the two interviewees to

respond; also, the interviewer allowed the two representatives to complement each other in giving answers, that is, one could add to what the other had said. Respondents were also allowed to go back to the previous questions when there was a need. Notes were taken to record answers.

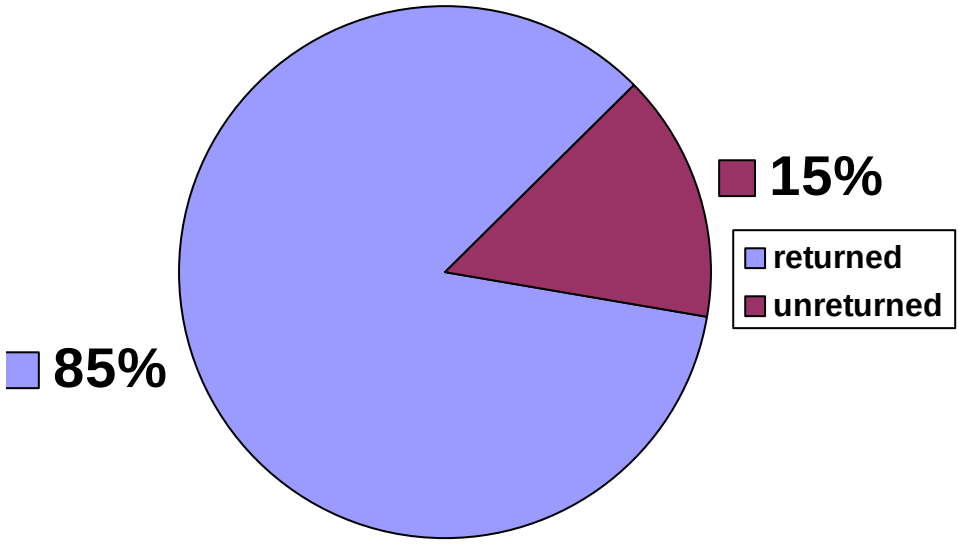
The Moses Kotane Municipality was represented by the Mayor, Mr Molelekeng, Mr Tshite and Miss Maphefo Pilane (both Councillors) and the same procedure as with the Bakgatla-Ba-Kgafela Tribal Authority was followed.

As indicated earlier on, interviews with 76 social clubs and 23 women's leagues as well as 8 Youth Leagues were conducted, mostly during weekends. The interviewer had to move from Pretoria to Saulspoort for this purpose because this was the most suitable time for the clubs to meet. The time taken by these interviews was somewhat longer than anticipated, as in most cases the interviewer had to move from village to village as per appointment with the specific group or groups. The interviews were thus carried out from March 2003 to June 2003. Whilst it was felt important to record the details of the interviewees, many of them opted to be anonymous as they did not want to appear in any records.

6.9 Results from questionnaires distributed to schools

Off all the 40 questionnaires that were sent to schools in the area (Appendix A), 34 were filled in and returned. This constitutes 85% and as noted above, this is regarded as above average response of participation and therefore very reliable.

Figure 6.1: Response from schools



The responses indicated that schools were able to identify some environmental problems although not uniformly: each school could identify problems that were different from what other schools had identified. This could have been caused by the fact that these schools were located in different areas. The response to question 1 (see appendix A) indicates that to some extent, people understand what environmental problems are. Another indication from question 2 (appendix A) is that the causes of the environmental problems could be identified.

Table 6.1 shows the most commonly identified environmental problems. The figures differ because of the difference in the ability to identify the problems. Some schools were able to list all ten environmental problems while others could not.

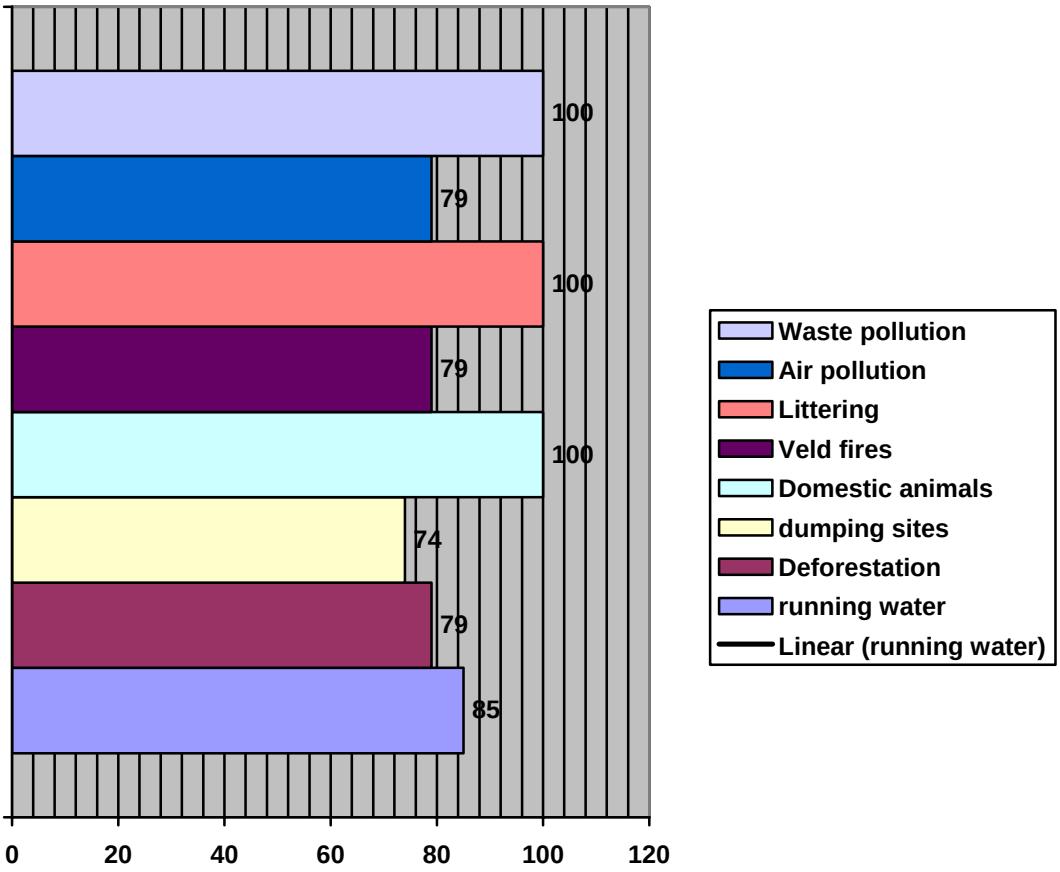
Table 6.1: Environmental problems identified in the area

Most common environmental problems identified	Level of awareness (34 schools)	%
Running water(Leaking pipes)	29	85
Deforestation	27	79
Dumping sites	25	74
Domestic animals	34	100
Veld fires	27	79
Littering	34	100
Air pollution	27	79
Waste pollution	34	100

All questionnaires (100%) returned indicated that domestic animals in the Saulspoort villages (figure 6.2) and the urban area of Mogwase are a major problem that needs to be well looked into: also, it has been mentioned that their presence in residential areas is a threat to the health of the residents as diseases can be easily and speedily spread.

Figure 6.2 shows that littering is also identified as a major concern by the schools (100%) and the cause of this problem is said to be ascribed to ignorance. Apart from littering, waste pollution (100%) was also mentioned as a major concern in the area. The two are closely related although most schools mentioned them as different problems: the assumption is that they are caused by limited knowledge as to how detrimental they could be to the entire area. Rivers and dams are also polluted yet this is where most children swim and play and even catch some fish.

Figure 6.2: Identified environmental problems



Deforestation is also occurring at a rapid rate because of dependency on wood. Causes cited are that though there are services such as electricity, people cannot afford to pay for them because of the lack of a stable income in most of the households. The problem is so serious that even though there is no dry wood any longer, people have embarked on cutting down trees and letting them dry at home. Branches of trees are now even used as a means to fence off the yards as well as kraals for domestic animals and land that is being used for subsistence agriculture.

Veld fires are a threat in this area. People are engaged in activities that normally start fires and it becomes difficult to extinguish them. This exacerbates air pollution in the area, which, in turn aggravates bronchial

problems. These fires result in an imbalance in the ecosystem of the area, and the animal and plant species may die and even become extinct.

Water is wasted as a result of leaking pipes. The response to question 17 shows that illegal connections are the cause. This could be ascribed to ignorance and being irresponsible towards resources.

The responses from all the schools in the study area indicate that it is important that environmental problems should be solved and that projects such as recycling and clean up campaigns should be carried out (Appendix AA, question 4).

The response to question 5 (Appendix AA) revealed that schools do consider that environmental problems should be solved as this will leave the area with a healthy and beautiful environment.

The investigation revealed that there are presently no established environmental clubs(question 11-13: Appendix AA)) in the area except for those that are found in schools; however, there is a strong indication that the youth are interested in joining environmental clubs if there are any. However, they do not know of any in the area and also would like to know how to go about forming one.

On the issue of the environmental problems experienced in the area, the indication is that there are three main issues: pollution, the cause of which thereof has been identified as being brought about by littering; veld fires, which are uncontrolled – denoting that people in the area engage in activities that perpetuate fires; and erosion, which is caused mainly by excessive grazing, cutting down of trees and removal of plants, grass and other plant species. One of the answers given was “People cut down the trees for different purposes and we are scared to comment about that because they will hate us”.

The concept of environmental education and conservation (questions 6 & 14, Appendix AA) is to some extent not very clear to the majority of the people in this area though they are quite knowledgeable about their area as well as the animal and plant species in it. It is worth mentioning that school children in this area are quite knowledgeable about nature as well as the different uses for different plants.

The concept of sustainability (question 16, Appendix AA), is a phenomenon which most of the people in the study area are not acquainted with. It is something that is done somewhere else and comments such as "Sustainability is something that people always talk about on the radio and television" and also "It is something that all the people of the world were doing in Johannesburg about the environment", comprised some of the answers given, which indicates that the concept is not known or understood. Also, poverty was articulated as the main barrier to aligning people with the principles of this concept; however, there was agreement with regard to its significance.

The investigation also revealed that not all the schools do visit the Pilanesberg National Park and the frequency of visits shows that they have only visited once or twice (20% of schools). Other schools (60%) do know that there is a conservation programme offered at the Park, but they have never had a chance to visit this Park. 20% of the schools that responded did not indicate whether they had visited the Park for its Conservation Programme or not.

6.10 Results from quantitative investigation

On the question of whether they participated in the World Summit on Sustainable Development which was taking place in Johannesburg during August/September 2002, the indication was that people did not understand what that was nor how they could contribute to that conference. It was something that was being talked about on the radio and television but they did not know exactly what was going on. Also, the youth thought that it was a conference that was attended by politicians and high profile professionals.

On the question of participating in the competition on “the cleanest city”, the youth indicated that according to their understanding, rural areas were not regarded as areas that could take part and therefore they had not bothered to do anything about it. Also, the indication was that people only wanted to participate in activities for which they would be remunerated.

The majority of people seemed not to understand the concept “environmental problem”. The answers indicated that the main focus is on problems such as poverty, unemployment, lack of income, crime and health issues as well as deteriorating morals in the vicinity. A few people (who were professionals) could give their own description of environmental problems, with the most often cited examples being pollution, soil erosion and uncontrolled veld fires.

On the question of how environmental problems could be solved, 70% of people interviewed indicated that it was presently not possible to come up with solutions that could be easily accepted, the reason being that people still depended largely on the environment. Examples cited were: “Due to a high rate of unemployment, people have difficulty in paying for services such as electricity, and resources such as paraffin and gas were too expensive, hence we still use wood extensively”. The fact that the chopping down of trees exacerbates environmental degradation is known to them, though they still maintain that they have no other alternative but to embark on this activity for survival.

On the question of misappropriation of resources such as water, whereby people perform illegal connections and thus obtain water for free, the issue of poverty was cited again. Interestingly, they were not aware of the fact that their actions put fellow residents at a disadvantage, who are paying more because of more water being drained from their supply pipes. The method used is also of concern to the authorities in that these extra pipelines are not of the required standard; instead, they are just ordinary hosepipes, which easily burst and are often disturbed in one way or another, as they are only 20

cm deep in the ground[4]. The problem arising from this act is an inability to report any problem for fear of being arrested as perpetrators, or being victimised by members of the community. As one interviewee said, "we are scared to report these because we will be victimised and the police take time to come when a matter has been reported". There are also no measures of control in order to save water, especially in the rural part of the study area.

The question on whether people were interested in environmental education was met with mixed feelings. 60% of the interviewees, especially the youth, seemed to be keen to know more about this issue, whereas 28% were not interested, postulating that they were keen to have a better economic life for themselves. Ironically, issues of conservation seemed to be classified as being for adults whereas issues of environmental education were classified as those for the young people. Another thinking was that of perceiving environmental education and conservation as just learning about the plants and animals that are found inside the Pilanesberg National Park.

People seemed not to be aware of the "***cleanest city***" competition that was being run by the Department of Environmental Affairs and Tourism and also did not think that they could also take part in such an activity. Those who had heard about it, thought that it was only for the selected few.

Asked whether people ever visited the Pilanesberg National Park, the response was that 40% did visit the park and that the purpose of the trip was entertainment, where they engaged in swimming and attended parties at the recreation facilities offered there.

An interview with the Moses Kotane Municipality Council revealed that indeed, councillors do visit the Pilanesberg National Park by invitation, when people want to hold meetings with them. The realisation is that, through environmental education, there could be many opportunities, especially for local community participation. The indication is that there is a need to look

[4] Information obtained from Mr Marobe, a representative of the Bakgatl-Ba-Kgafela Tribal Authority.

after the environment and make sure that resources are utilised responsibly. Mr Pilane and Mr Marobe also shared the same sentiment. There is much motivation, especially after a workshop that was supported by the Swedish Government: one of issues that were tabled was that of the environment. The council still believes that something can be done to conscientise people about issues pertaining to conservation.

Though most of the councillors have visited the Pilanesberg National Park, whether whilst on duty or in their own time, they have never visited the education centre and the indication is that they do not know about the activities of the centre, thus denoting that the environmental benefits that could be gaining from this park have not yet been realised. On the same issue, representatives of the Bakgatla-Ba-Kgafela Tribal Authority, knew about the education centre but thought that it was for schools only.

The council have identified the following environmental problems: A dumping site near Mogwase industrial area, which is not yet legal; the council is trying to find a suitable site which will minimise the health hazards for the community of Mogwase. The indication is that cooperation with environmentalists and other interested parties would be greatly appreciated so as to achieve that kind of development which is sustainable. Also, integration with regard to ideas should result in people knowing exactly what is to be dumped there and what is not.

The Bodirelo industrial area is also a major concern at the moment because of bad smelling gases that are emitted by these industries especially in the evenings. Such excessive air pollution could comprise gases that are dangerous to the lives of residents surrounding this area.

A framework needs to be put in place for operational ethics to be practised by these industries[5], though it is not yet clear as to who should check on these

[5] Information obtained from an interview with the Mayor of Moses Kotane Municipality Council, Mr Peter Molelekeng.

people; also, there are no guidelines as to how to go about it. It is not very clear as to who should take the responsibility[6].

The council expressed the importance of looking after the resource base and members regard it as a platform for sustainable development and sustainable living. Environmental education and information about conservation would enable people to regard their own environment with greater awareness.

Enlightening local people about the environment, which is their resource base, would complement the beauty and sustainability of the area, something that could spark more tourism opportunities that could even spill into the communities, thus enhancing the economic muscle of the people and the area. Presently, the Integrated Development Plan (IDP) that is in place includes conservation matters, though it has not been implemented yet.

The investigation into the role of the Bakgatla-Ba-Kgafela Tribal Authority revealed that members of the tribal council do visit the Pilanesberg National Park, in most cases by invitation or if they have to hold meetings. They do visit as individuals, depending on the availability of time and interest, but have never visited the education centre, because of a perception that it is only meant for school children.

The Tribal Authority has identified the following environmental problems in the area: Pollution of water, where the river is polluted. Much of this pollution is alleged to be from littering by residents as well as by the local hospital through its dumping site. Littering is another issue: paper, plastic materials, bottles and tins are scattered everywhere. This seems to be a major problem in the area and the cause, according to the authorities, could be that people are not environmentally literate. That is, they only clean their yards but do not do anything about areas beyond that.

[6] Information obtained from Mr Peter Molelekeng.

Veld fires constitute another major environmental problem. Where, according to tribal authorities, fires are not controlled and they disturb the environment in the sense that plant and animal species are killed and the soil becomes exposed, hence the high rate of soil erosion.

Development is needed by the people of the Mogwase-Saulspoort area but it must be sustainable; for instance, people should be aware of how much they affect the environment and should thus act proactively and also try to mend all the scars that have been caused in the name of development. Due to the high rate of unemployment, people have embarked on activities that leave the environment much deformed[7]. Though the local chief has tried several times to conscientise them about their actions[8], nothing has changed; for example, people engaged in brick making always leave the area scarred and move on to other areas to continue with their trade and nothing is being done to rehabilitate the area left behind.

Another problem that has been identified by the Bakgatla-Ba-Kgafela authorities is that hunting still takes place and it looks as though people are not aware of the importance of animals, which is to help sustain the symbiotic relationship amongst elements of the ecosystem.

The chief has tried in vain to persuade people to remove animals from the village as this could speed up the spread of diseases and also hinder the development of amenities such as parks and gardens. Camps are available for animals as well as agricultural purposes.

The authorities in the Mogwase-Saulspoort area think that people in this area still need information about conserving their own environment and would support the idea of using education as a weapon against further environmental degradation. The feeling is that education about, for and from the environment would influence local people to think and act proactively towards their own resource base. Being environmentally literate would enable

7 Information obtained from Mr Molefe Marobe of the Bakgatla-Ba-Kgafela Tribal Authority
8 Information from the interview with Mr Marobe and Mr Pilane

them to think and see the full spectrum of how they could live in harmony with their own environment. This could be coupled with activities that contribute towards the economic growth of the area, for example, activities such as “collect-a-can”, which could even be spread to the collection of other materials that could bring in money for people, whilst living sustainably in a clean environment.

Figure 6.3: Patches resulting from uncontrolled fires in Saulspoort

Photo taken by Mapula Tlhagale

Authorities in the study area are willing to cooperate with agents that are prepared to come up with a fixed long term environmental education plan for the area, and also have voiced their concern about lack of funds for such development.

Hospital authorities have identified environmental problems in the study area from a health point of view, which could also be linked to problems already identified by authorities of the area as well as residents. Air pollution was cited as the major problem, with the causes being identified as a result from veld fires and the use of wood for fire making.

According to Mr Koen, who is the general manager of the hospital complex, this cannot be avoided at present because 78% of the population, especially in the Saulspoort area unemployed and can therefore not afford to pay for electricity, which is available in the area. Also, littering is another problem that could be ascribed to lack of awareness of how detrimental it can be to plants, animals and people.

Another health hazard for the area is exacerbation of diseases, a situation that is caused by leaving domestic animals such as cattle, goats, pigs, donkeys to roam in the residential areas.

Solutions to these problems could include more education about the environment as well as greater availability of resources as a steady income for people. The hospital is trying to "inform people about healthy living prerequisites though this is not yet successful due to poverty and lack of resources that could stimulate some initiatives for a better living" [9].

The response to the question concerning whether The Pilanesberg National Park Education Centre officers ever go out and invite or encourage members of the Mogwase-Saulspoort communities to visit the Park for environmental education purposes was that they actually visit some schools but not members of communities in general.

Problems that have been identified by park authorities in this area are, firstly, littering, which could be caused by lack of information as to how it could contribute towards the spread of diseases. Secondly, soil erosion is another

[9] Statement by Mr Koen: Senior Superintendent at the George Stegmann Hospital.

problem that is alleged to be aggravated by overgrazing and uncontrolled veld fires as well as uncontrolled development, especially in rural areas.

Communication with schools that are being targeted is personal, and no other form of communication is used. To the question about whether billboards, pamphlets and posters were deemed important in conveying a message to the people, Mr Thebe (Environmental Education Officer) responded that this would be a good form of communication though the park had never used that mode of communication previously.

There are no statistics available of the number of people who have visited this centre specifically for conservation or environmental education purposes. The only information regarding this is that the centre is visited by schools from the area as well as from, further afield. It is therefore noted that members of the community are not even aware of the environmental benefits that they could derive get from the centre hence they are not enthusiastic about visiting it. The main problem is that people tend not to value things that are in their backyards but rather those that are further away.

The education centre at the Pilanesberg National Park has no affiliation for environmental clubs presently. Initially, they were affiliated with the Environmental Education Association of Southern Africa. Schools possessed conservation clubs before transformation, called the Lengau Conservation clubs, but with the new dispensation, these clubs have died off. There is an initiative to rebuild them but it has not yet been successful; there is no continuity. Presently there is a section at the Department of Agriculture that is responsible for the formation of environmental clubs. Changes in their structure still have to be discussed and negotiated with the provincial government, but there is uncertainty as to whether names will change or not, and sometimes changes affect clients as well as organisations and work. Arrangements are still in the pipeline for the Pilanesberg National Park and the Department of Agriculture to work in partnership in the formation and management of environmental clubs.

Even though the education centre would like to conscientise members of communities in the area about the environment and sustainable living, it does not have a programme yet. Its staff would like to have one which could be used as a framework within which everyone should operate, which will also align itself with the principles of environmental education stipulated by UNESCO. This will help to integrate school children with other members of the community and thus help to create the ability to deal proactively with environmental issues.

There are certain clubs within these communities which even though they are not environmental clubs, because they deal with issues of society such as substance abuse, could extended their activities to cover the environment, since it is also a social issue.

Sometimes people are against such issues[10]. There are many reasons: some could say, "this is a western thing", some might say that government respects animals more than people. All in all, some people could take it to be foreign, which is not true. There is a need to connect old ways of caring for the environment with the new way of conservation.

The principle of conservation has been there since, for example totems were introduced, where people pay respect to a specific animal and ensure that it is not killed. For example, the Bakgatla-Ba-Kgafela regard the vervet monkey as their totem animal, meaning that it has to be respected and preserved. Because of this belief, many animals have been saved through the ages. It is related to the western way of conservation where people embark on an "adopt an animal" campaign, and in that sense animals are well looked after.

"*We must guard against abuse and misuse of resources because the way we use the resource determines our future and the future of generations to come*"[11].

[10] Information obtained from Mr Thebe, a conservation Officer at the Pilanesberg National Park.
[11] Information from interview with Mr Thebe

As noted above, there are no established environmental clubs in the Moses Kotane District Municipality, but there are schools and youth groups that have shown interest in the formation of environmental clubs. These groups are still formulating aims and objectives that are envisaged to be in line with those of the Pilanesberg National Park while also being drawn up according to the needs of the area.

Projects that most of these clubs have decided to embark on are cleaning campaigns and recycling though this is still at an early stage; not much has been accomplished yet.

Clubs seem to be enthusiastic about their aims and objectives although they are still battling with issues such as acquiring land for some of their projects because of reluctance by authorities to assist[12].

Presently, there is no fixed environmental programme but the environmental officers are visiting these clubs to see if there is any progress and to give some advice on how to go about planning, developing and managing their projects.

Progress is slow due to lack of funds. At the present moment, clubs generate their own funds and it is difficult for them to succeed as they do not know whom to contact for help. They do not have any other support than advice from environmental officers[13].

Schools also have difficulties in forming environmental clubs due to a lack of interest from educators. There is no fixed environmental programme but environmental officers meet with club members once in a quarter to discuss their activities.

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12 Information from Mr Kgaboesele: Environmental Officer at the Department of Agriculture – Mogwase.

13 Information obtained from Mr Juda Kgaboesele, Environmetal Officer at the Department of Agriculture-Mogwase.

6.11 Summary of results

The investigation revealed that schools are not yet engaging in issues of the environment. That is, environmental education is not incorporated into subjects; perhaps this could be ascribed to the fact that the curriculum is arranged by the government, and this initiative has been left out.

Schools are not engaged in any kind of environmental activity though there is an indication that they could be if they received some guidance; the reason here might be that there is not enough information and there are no resources such as the internet, where teachers can collect as much information as they can and use it at their schools. Also schools do visit the Pilanesberg National Park but they do not obtain enough information with regard to environmental education and sustainability. The concept of sustainability is not quite clear to schools and needs to be given more attention if communities are to live sustainably.

The investigation into the youth revealed that the youth in this area are not involved with environmental issues but rather with politics and economic issues.. The reason is that there is no information at all about the environmental issues and there are also no resources such as libraries, the internet, etc. Though the youth in this area are more concerned about issues of survival, there is an indication that they would engage themselves in environmental issues if they could receive guidance and enough information.

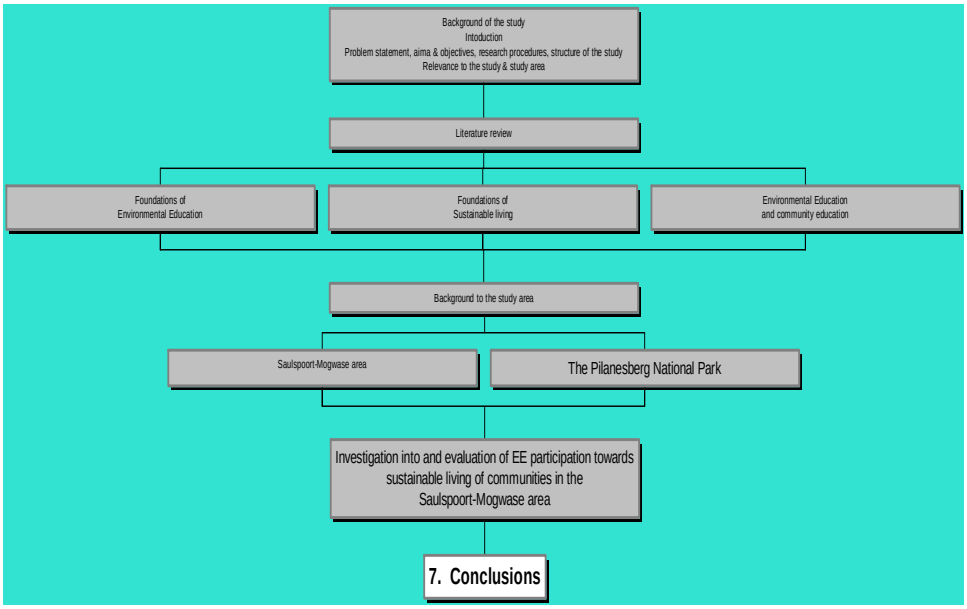
Three major environmental problems were mentioned by everybody: the authorities, women, members of the community at large, municipal councils and schools. These are pollution, littering, and veld fires. There are some other issues though, such as deforestation, running water and the presence of domestic animals in the area, that are also of major concern because if they are not dealt with, they could cause further more environmental degradation as well as the spread of diseases in the area.

The community also indicated that they are not knowledgeable about environmental issues, especially the principles and guidelines, though the indication is that since conservation is not a new venture in their existence, they are prepared to learn about it although this could take some time, especially with the high rates of unemployment and poverty.

Authorities in the area do visit the Pilanesberg National Park but not the education centre and therefore are not aware of its activities. They are prepared, though, to support any initiative that will save the environment. However, they have indicated that there are not enough resources and that funds are not available to support this initiative. Environmental Education to them is something that is being done in the Pilanesberg National Park and not in their village. This demonstrates that the concept is not yet clear in the minds of people.

All the people in the area showed some interest in Environmental Education and conservation matters and have stated that maybe this could bring some money into the area. The indication here is that it is not that people entirely understand the concept of achieving sustainability, but that they are hoping that this will be accompanied by development that will alleviate poverty in the area by creating some employment opportunities.

7 CONCLUSIONS



7.1 Introduction

This chapter reviews all the reasons for and the objectives of the investigation. It integrates the literature and the result of the investigation, describes the conclusion of the investigation and also offers some suggestions. It looks particularly at the participation of schools, community members, especially women, and the youth, as well as the authorities, in achieving sustainability. This conclusion also reveals the level of environmental awareness in the area and can therefore be used as a measurement of the preparedness and the willingness to participate in conserving and respecting the environment.

7.2. Review of the aim and objectives of the study

The problem, as stated in section 1.2.1.1, was that although there is greater global environmental awareness, there is still lack of participation at the ground level and that there is not enough diffusion of information to communities at the ground level, thus making sustainable development a difficult concept to comprehend and to live by. However, there are many organisations and institutions such as the Pilanesberg National Park, whose

course of action is directed at ecotourism activities and conservation issues as well as environmental education for people living in the vicinity as well as those from places further away.

This study therefore intended to investigate and evaluate (basing these on the literature study on principles of environmental education and those of sustainable development), the impact of the Pilanesberg National Park on the local communities' living environment; and hence to determine if these communities do understand the concept of sustainable development and are practically living according to the principles and guidelines thereof, by means of the environmental education offered at the centre,

7.3 Findings from the literature review

The importance of Environmental Education has been highlighted since the 1970's and its aims and principles serve as a relevant framework to which all the activities of human beings must be attached, in order to align themselves with environmental peace. Reports such as Agenda 21 have proved to be leading documents with regard to environmental awareness and providing advice on development while recognising earth's greatest need to survive. Whilst Agenda 21 seemed to be concentrating on the principle of sustainable development, the World Summit on Sustainable Development in Johannesburg has taken a very important course, which is that of implementation.

Although the principles of Environmental Education were formulated at an international level, it is important that they be broken down and simplified so that they can fit into the beliefs and the value system of every society. This implies that the residents of the Mogwase-Saulspoort area, as part of the global community, should also gain access to information with regard to Environmental Education and sustainable development. It is motivating to realise that the world's nations, through the World Summit on Sustainable Development, are eager to alleviate poverty, which is one element that perpetuates the pressure that is being put on the resource base.

7.4 Findings from the qualitative investigation

The findings of this study revealed that there is still more to be done in researching both the concept of environmental education and sustainability. On the global scale, there are archives of information regarding sustainable development, conservation and environmental education, whilst at the local level, there is still little understanding of these concepts and in some cases no information at all about them. Environmental Education as an integrative concept is still not included in most of the syllabi of schools, especially in rural areas of South Africa, such as the Mogwase-Saulspoort area. This is supported by a negative response to questions 8 and 9 of the questionnaire which aimed at determining whether Environmental education is taught as a subject or is spread across the disciplines.

Lack of resources is also a problem that is being experienced by schools in the study area and this makes it difficult for information to move at a reasonably fast rate; information on how the integration of Environmental Education into all subjects should be handled, is still lacking.

There also seems to be a huge gap between theory and practice, where communities do not have sufficient resources to learn and participate in matters of the environment and conservation.

The communities of the Mogwase-Saulspoort area are still lagging behind, though the government and some municipalities are equipped with information regarding sustainability. Though the dissemination of information is rapid on a global scale, especially with the use of the internet and other technology, because of the isolation of these local communities, the information is only for the elite. For example, even professional people in the rural areas are not exposed to this technology and also do not have access to it.

7.5 Findings from the quantitative investigation

Presently there is no participation evident due to the absence of well established environmental clubs in the area. However, there is an indication of interest in participating in conservation, though poverty and unemployment are hindrances: Schools in the area, to some extent are aware of the environmental problems in the area but most people do not like to take any initiative owing to the expectation that someone else must do it.

Women in this area are quite active, but in activities other than conservation. This however could be changed if enough information on how to conserve the resource base is given. Because of their status as managers in the community and of the environment, the concept of sustainability through environmental education could be diffused easily into the area through them and environmental projects could be successful.

Up to now, there has been little participation in a change towards sustainability though there is a strong indication of cooperation and support should any initiative be began to enlighten the residents about issues of the environment and sustainable living.

7.6 Major problems with the investigation

A major problem encountered with this investigation was time as in most cases, the author had to travel from Pretoria to the Mogwase-Saulspoort area, after having made appointments with people but they would not honour the appointments. Reasons given included that they have forgotten or that there were other commitments, and appointments had to be rescheduled many times.

One major problem that every researcher in this area will be faced with, is that people will expect some development initiatives and will also state that there have been too many people researching, but there are still no development or job opportunities in the area.

7.7 Suggestions for the future

After having undertaken the literature study and the investigation into the implementation of environmental education principles towards sustainable living in the Mogwase-Saulspoort area, the author has derived the following suggestions as a starting point for sustainable living in the area:

1. Formation of one environmental organisation in the area, and local environmental clubs that will represent the different wards within the area (This could be spread to other areas later on).

2. Organisation of a workshop, where issues pertaining to the environment are discussed, a common vision is identified and representatives are elected. Experts from outside could be invited to come and share knowledge as well as strategies for putting sustainability guidelines into practice.

3. Formulation of a vision and an aim as well as objectives that will be used as stepping-stones towards the vision (Representatives could share suggestions from their respective clubs).

4. Identification of environmental problems in the area. Environmental problems are site specific and their impacts are community specific.

5. Gathering of information should be carried out through research in order to obtain possible relevant solutions to the environmental problems.

6. Formulation of a financial strategy (Identification of methods of accumulating financial resources as well as organisations to be approached for financial assistance), to enable an organisation to develop and manage problems and projects.

7. Identification of projects to be undertaken (short and long-term).

8. Assigning of responsibilities, including those for the financial strategy (Time-frame to be indicated).

9. Implementation of projects (Time frame to be indicated).

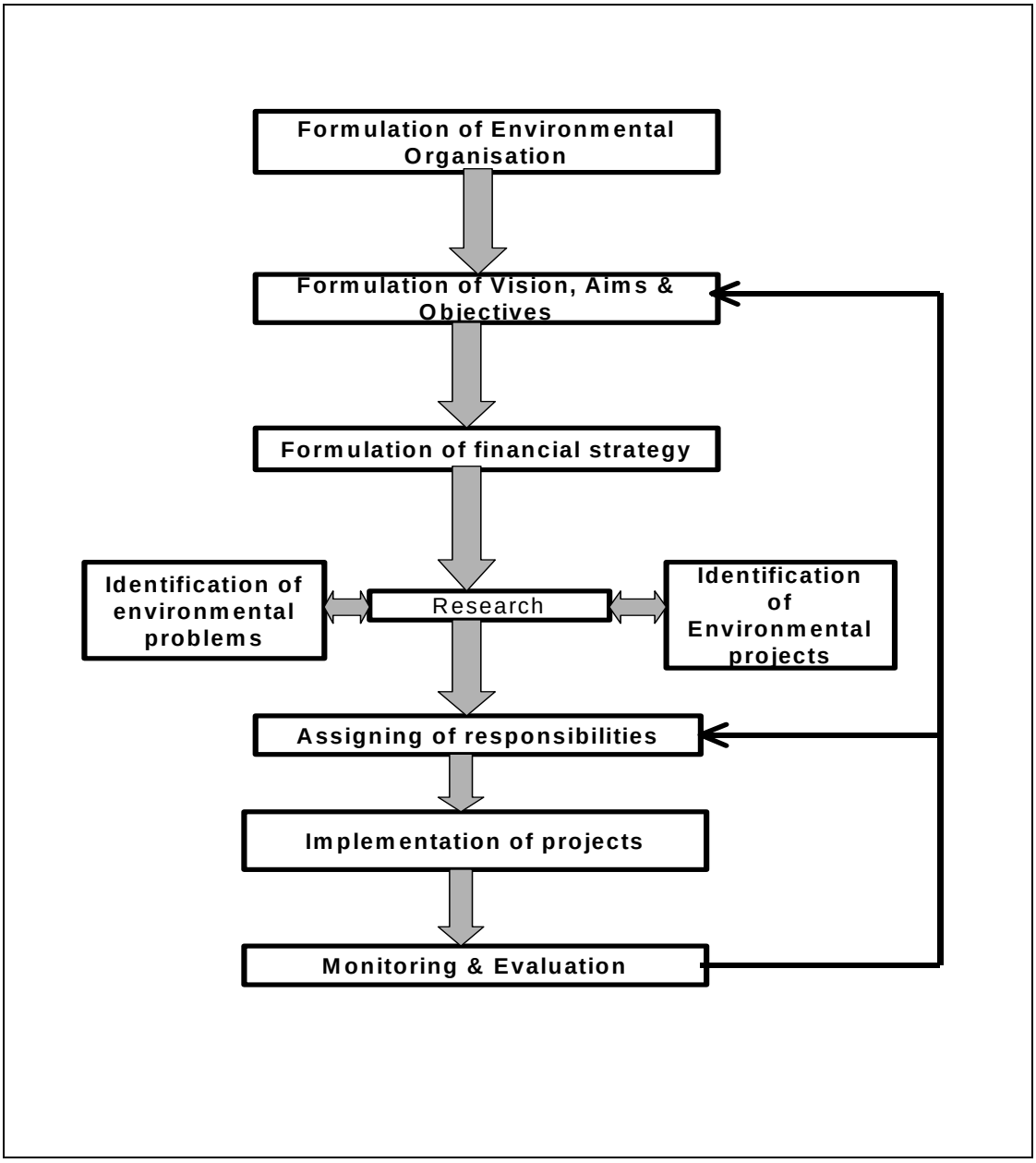
10. Monitoring and evaluation (Continuous evaluation should be put into place and this should be based on the vision, aim and objectives of the organisation. Monitoring should continually be carried out in order to see that activities are always carried out according to government policy and guidelines regarding sustainability.

Another suggestion is that there should be workshops and meetings in between them to revive interest and the urge to proceed with the initiatives, and also to discuss issues and problems identified during the process.

Follow-ups are a relevant strategy in ensuring that participation continues and that of any course taken is understood.

Actions taken should be carefully monitored and evaluated in order to avoid possible flaws. Information from this step is valuable and should be used during meetings and workshops. Also during these meetings, the vision, aims and objectives should be reviewed in order to determine whether the course of action taken is within the framework.

Figure 7.1: Suggested steps for participation towards sustainable living.



7.8 Summary

Whilst the media is a relevant tool for distribution of information, little is being done to convey the concept of sustainable living to the local people. There is a great need to disseminate information about the importance of the

environment and sustainability amongst the communities of the Mogwase-Saulspoort area.

Although poverty and unemployment continue to be factors perpetuating activities that are unfriendly to the environment, there is still a chance to equip people with information that will ensure a change of discourse and their being able to understand and participate willingly in activities that are on a par with international environmental principles and guidelines regarding sustainability.

Since education in these communities has been both formal and informal, both systems could be used to bring about understanding and acceptance of change, which could work in collaboration with modernisation and steps towards sustainability.

The Pilanesberg National Park, through its educational centre, has not yet done much about educating the people of the Mogwase-Saulspoort area about environmental education, hence the lack of participation in conservation and sustainable living. Nevertheless, this is a situation which can be rectified, as this study has attempted to show.

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APPENDIX A: SCHEDULE OF QUESTIONS

AA: QUESTIONNAIRE FOR SCHOOLS

Name of School/Institution _____

Primary ☐ Secondary ☐ High ☐

Person completing the form: _____

Position of that person: _____

Tel: _____

1. What do you think is an environmental problem? _____

   _____

   _____

   _____

2. Do you have environmental problems in your area? YES | NO

3. List at least eight environmental problems that are experienced in your area and next to each problem the cause of that problem.

PROBLEM	**CAUSE**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

4. How can the environmental problems in your area be solved? _____

_____

_____

_____

_____

5. Why do you think the environmental problems should be solved?

_____

_____

_____

_____

6. What do you understand by environmental education?

_____

_____

_____

_____

_____

7. Do you teach environmental education at your school? | YES | NO |

If No go to question 9.

8. Is environmental education incorporated in all your school subjects or is it taught as a theme on its own? _____

_____

9. Is your school engaged in any activity that is directly concerned with improving the environment? | YES | NO |

10. If the answer is YES, describe any three environmental activities that your school is involved with in your area.

a. _____

b. _____

c. _____

11. Is your school affiliated with any environmental club or organisation?

_____

12. If YES, what is the name of the club/organisation? _____

_____

13. What are the aims of this organisation? _____

_____

_____

14. What does 'conservation' mean to you? _____

_____

_____

_____

_____

15. How would environmental education and conservation be of benefit to your area? _____

_____

_____

_____

_____

16. What do you understand by the concept "sustainability"?

_____

_____

_____

_____

17. Which activities do you think complement the concept of sustainability?

_____

_____

_____

_____

_____

18. If you were given an opportunity to learn about environmental education, would you do so? _____

19. Would you be interested in forming or joining an environmental club in your area? _____

20. How would you address the environmental issues in your area?

_____

_____

_____

_____

_____

_____

ABOUT ENVIRONMENTAL EDUCATION AT PILANESBERG NATIONAL PARK

Presently, there are environmental education and conservation programmes running at the Pilanesberg National Park's education centre. This centre offers environmental education and conservation lessons to grade 0 - 12 pupils on a daily basis during the week and by appointments over weekends.

21. Does your school ever visit the Pilanesberg National Park?

YES	NO

22. How has the park influenced your school? _____

_____

_____

_____

_____

23. Does your school attend the conservation programme offered at the Park?

YES	NO

24. If the answer YES please answer the following question by completing the table that follows:

PRIMARY SCHOOL

Does your school use the centre

a. as a recommended excursion during the week

b. as an extra excursion offered after school hours or

c. during weekends?

CLASS	TIME OF VISIT	FREQUENCY OF EXCURSIONS		
		Not at all	Once a term	Once a year
Grade 1	a.			
	b.			
	c.			
Grade 2	a.			
	b.			
	c.			
Grade 3	a.			
	b.			
	c.			
Grade 4	a.			
	b.			
	c.			
Grade 5	a.			
	b.			
	c.			
Grade 6	a.			
	b.			
	c.			
Grade 7	a.			
	b.			
	c.			

HIGH SCHOOL

CLASS	TIME OF VISIT	FREQUENCY OF EXCURSIONS		
		Not at all	Once a term	Once a year
Grade 8	a.			
	b.			
	c.			
Grade 9	a.			
	b.			
	c.			
Grade 10	a.			
	b.			
	c.			
Grade 11	a.			
	b.			
	c.			
Grade 12	a.			
	b.			
	c.			
Other: specify	a.			
	b.			
	c.			

SCHOOL'S STAMP

AB: QUESTIONS FOR INTERVIEWS

Park authorities

1. Do you ever go out and invite or encourage members of the Mogwase-Saulspoort communities to visit the PNP?
2. What mode of communication do you make use of to reach these people?
3. What percentage (since the inception of this park) of visitors are from this area?
4. What is the percentage of local visitors who visit specifically for environmental education or conservation enlightenment?
5. Do you have a conservation club or are you affiliated to any national or international club?
6. How many conservation groups do you have within the Mogwase-Saulspoort area?
7. How many times in a year do you go out to inform communities in Mogwase-Saulspoort area about the Park as well as about opportunities to be informed regarding environmental education as well as conservation?
8. How many schools in the area do you work with in relation to environmental education and conservation?
9. Do you have a fixed community programme for environmental education and conservation?
10. Is there an initiative to form environmental clubs (if these are not in place) or to increase membership, especially working with youth groups in this area?

Community involvement

1. Have you ever heard of the concept of “sustainability”?
2. According to you, what does sustainability mean?
3. How are people related to the environment?
4. What does environmental education mean to you?

5. How can you take care of the environment outside your home/house?
6. Are there people in this area who are interested in environmental education, conservation and issues of sustainability?
7. Is there an indication for a viable environmental programme with all members of communities in this area?
8. What environmental activities do you, together with communities, engage in?

Headsmen and Councilors

1. Have you ever visited the Pilanesberg National Park?
2. Are visits out of your own initiative or per invitation?
3. Were you ever invited to the education centre at this park?
4. Have you identified any environmental problems in your area?
5. What could be the causes attached to those problems?
6. In your own view, how can these environmental problems be overcome?
7. In your own view, what does sustainable living mean?
8. Do you think that environmental education can be a step towards living sustainably?
9. Would you welcome and support the idea of having environmental education programme run in your area for your people?

APPENDIX B: LIST OF COMMUNITY MEMBERS INTERVIEWED

1. Bakgatla-Ba-Kgafela Tribal Authority

- Mr Molefe Marobe
- Mr N. Pilane
- Mr V. Pilane

2. Pilanesberg National Park

- Mr Simon Thebe
- Mr Judas Kgaboesele (Dept of Agriculture)

3. Moses Kotane Municipality Council

Mr Peter Molelekeng (Mayor)
Ms Helen Phefo (Chairperson of the ANC Youth League)
Mr Tshite (Councillor)

Church women' Leagues (Lesetlheng, Moruleng, Lerome, Welgevaal, Sandfontein, Dikweipi, Ramatshaba, Manamakgoteng)

Clubs/Societies

Morula
Kagisano
Tsholanang
Itsoseng
Tsholofele
Thusa-Batho
Basha
Ipelegeng-Baphuting
A re faneng Diatla Kopano
A re Bolokaneng
Baikanyegi
Matlhomola
Ipeleng
Moruleng
Pelegano
Itekeng
Itireleng
Kutlwano
Mabogo-Dinku
Ipatlisise
Bosele
Tshireletso
Mathata
Kgomo
Molapong
Itlotleng
Itlhokomeleng
Thusanang
Ratanang
Bolokanang
Itsoseng
Utlwanang
Tshwaraganang
Ikakanyeng

Maanogasite
Bakgatla
Young Tigers
Beleganang (Greenside)
Ipolokeng
Beleganang (Moruleng)
Thusanang (M.A-Podi)
A re kopaneng (Manamakgoteng)
Bafambi (Lerome)
Rebone
Ipelegeng ba Kgomo
Itshepeng
Bodiri
Mpepu
A re tshwaraganeng
Makakatlela
Tirisano Mmogo
Ikanyegeng
Lerekhuring
Utlwanang (Manamakgoteng)
Kutlwano ke Maatla
Refentse (Welgevaal)
Bolokanang (Segakwana)
Re ikemetse
Kopanyang Diatla